UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SALEM DISTRICT OFFICE
MARYS PEAK RESOURCE AREA

RUNNING BEAR LSR ENHANCEMENT PROJECT

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

EA NUMBER : OR-080-99-09
PREPARED BY: Interdisciplinary Team; Scott Hopkins, Team Lead
AREA ENVIRONMENTAL COORDINATOR: Belle Verbics
FISCAL YEAR: 1999 DATE: June 28, 1999

SUMMARY: This document is an environmental assessment and finding of no significant impact for the proposed Running Bear LSR Enhancement Project, tract number 99-308. The project area is located in Sections 32 and 33, Township 12 South, Range 7 West, and Sections 3 and 5, Township 13 South, Range 7 West, Willamette Meridian, Benton County. The land use allocation is Late-Successional Reserve.

Alternative A (the proposed action) would remove approximately, 4.6 million board feet (MMBF) of merchantable timber from about 335 acres of land in accordance with the *Salem District Resource Management Plan* and the *Northwest Forest Plan*. The sale would involve density management (thinning harvest) in young conifer dominated stands 34 to 54 years old, along with coarse woody debris (CWD) enhancement, and road building/renovation followed by decommissioning and/or closure. About 110 acres of the treatment area would be yarded by helicopter, while the remaining harvest area would be yarded with cable and ground- based systems.

Alternative B would be the same as Alternative 1 except that fewer acres would be treated (about 325 acres), all yarding would be accomplished by cable and ground based systems (helicopter would not be used), and additional road building would be needed.

The attached environmental analysis focuses on the following issues identified through Scoping and by an interdisciplinary team of BLM resource specialists:

1) Forest Productivity: What effect would silvicultural treatments have on maintaining long-term forest health and stand biodiversity?

2) Soils: How would the alternatives affect long-term site productivity?

3) Water/Riparian: What effect would the proposed projects have on water quantity and quality as it affects beneficial uses? How would timber harvest and associated activities affect attainment of the Aquatic Conservation Strategy objectives?

4) Botany/Fish/Wildlife: What would be the effect of the proposed project and associated activities on habitat and populations?

5) Fuels/Air Quality: What would be the effect of the proposed project on fuel loading and fire risk? How would air quality be effected by the potential prescribed burning for fuel hazard reduction ?

For further information contact Scott Hopkins at (503) 315-5956 or Diane Morris at (503) 315-5960, 1717 Fabry Rd. S.E. Salem, Oregon, 97306. Comments on the environmental assessment are due by 4 PM, Wednesday, July 28, 1999.

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) has analyzed the potential effects of a density management (thinning harvest), coarse woody debris enhancement, and road management project in the Upper Alsea Watershed, Marys Peak Resource Area, Benton County, Oregon. The actions described in this Environmental Assessment (EA) including the Running Bear Density Management Timber Sale (T.S. 99-308) are proposed for the purposes of implementing standards and guidelines for enhancement of forest habitats and to meet the need for forest products as identified in the *Salem District Record of Decision and Resource Management Plan* (the ROD/RMP; see pages 1 and 2). The EA is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination.

The FONSI and the EA are being made available for public review prior to making a decision on the action. The public notice of availability for review will be published in local newspapers of general circulation, on the Salem District Internet website and through notification of interested individuals, organizations, and state and federal agencies.

Finding Rationale

For the alternatives analyzed, significant impacts on the quality of the human environment would not occur based on the following criteria:

1) The alternatives fall within the range of those analyzed in the *Salem District Proposed RMP/Final Environmental Impact Statement* (Sept. 1995; the PRMP/FEIS). The environmental consequences of the proposed action and alternatives do not exceed those described in the PRMP/FEIS.

2) The proposed action and alternatives are in conformance with the ROD/RMP, which describes the general management objectives, land use allocations, and management actions/direction for BLM-administered lands in the Marys Peak Resource Area.

3) As displayed on the following table, the alternatives are in conformance with components of the Aquatic Conservation Strategy (ACS) as described in the ROD/RMP (pp. 5-7).

4) The alternatives are consistent with management guidelines established for Late-Successional Reserve lands as described in *Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (RO267, RO268), version 1.3 June 1997* (LSRA; USDA FS and USDI BLM 1997).

5) The alternatives are consistent with other federal agency and State of Oregon land use plans and with the Benton County land use plan and zoning ordinances. Any permits associated with the implementation of this project would be obtained, and all requirements would be met.
6) No flood plains, wild and scenic rivers, prime or unique farmlands occur within the proposed

harvest areas.

The following Table shows how this action relates to required components of the Aquatic Conservation Strategy (RMP, p. 5 - 7):

Component	**Relationship of This Action**
Riparian Reserves	Density management would occur inside of Interim Riparian Reserves (under both alternatives) as a means to accelerate the development of late-successional forest characteristics and provide for recruitment of coarse woody debris into riparian habitats that currently lack such components.
Key Watersheds	The proposed project area is not in a Key Watershed.
Watershed Analysis	The North Fork Alsea Watershed (part of Upper Alsea) was completed in July 1996. This proposed action was specifically designed to respond to several resource issues identified in the Watershed Analysis. Many of the recommendations identified in the analysis have been incorporated into this proposed action including: density management within LSR and Riparian Reserve allocations, road decommissioning, and coarse woody debris enhancement for wildlife habitat and future recruitment into stream channels.
Watershed Restoration	Recommendations from the Watershed Analysis that promote watershed restoration provide part of the purpose and need for this proposed action. These include: density management within riparian habitats and road decommissioning to improve long term hydrologic recovery. Effects to resources described in the Aquatic Conservation Strategy Objectives (stream physical integrity, water quality, sediment regime, in-stream flows, species composition, etc.) are addressed in the Environmental Consequences section of this EA.

7) The proposed action is within the coastal zone as defined by the Oregon Coastal Management Program. This proposal is consistent with the objectives of the program and the state planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act.

Program. This proposal is consistent with the objectives of the program and the state planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act. Management actions/direction found in the ROD/RMP were determined to be consistent with the Oregon Coastal Management Program.

8) Cultural and paleontological resources were not found in the project area.

9) No hazardous materials or solid waste were observed in the project area nor would they be created by the proposed action. Any chemicals or fuel used on the site would be handled using best management practices.

10) The sale area does not qualify for potential wilderness nor has it been nominated as an area of critical environmental concern.

11) Project design features would assure that potential impacts to water quality from this project would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act.

12) The proposed action and alternatives described for this project are in conformance with *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (ROD)*; and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (S&G). These two documents are collectively referred to herein as the *Northwest Forest Plan* (NFP). In a Biological Opinion (BO) issued in February 10, 1994 the United States Fish and Wildlife Service (USFWS) determined that the adoption of Alternative 9, as amended into the *Northwest Forest Plan,* was not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of any designated critical habitat for those listed species. The opinion did not quantify on-the-ground impact of specific management actions and did not provide an incidental take statement. Incidental take is quantified and appropriate "take" permits are issued through biological opinions for specific actions.

13) In order to comply with Section 7 of the Endangered Species Act (ESA), the Running Bear LSR Enhancement Project was submitted for specific consultation with the USFWS as part of the *Programmatic Biological Assessment (BA) of Fiscal Year 1999 Projects in the Oregon Coast Range Province Which Would Modify the Habitats of Bald Eagles, Northern Spotted Owls, or Marbled Murrelets.* This consultation was concluded with the USFWS issuing the BO dated October 23, 1998. The BO determined that the level of any anticipated incidental take is not likely to result in jeopardy to the northern spotted owl, the marbled murrelet, or the bald eagle since this proposal is in conformance with the *Northwest Forest Plan.*

14) Consultation with the National Marine Fisheries Service (NMFS) is in progress. The BA, which assessed potential impacts to listed fish in the Oregon Coast Evolutionarily Significant Unit (ESU), was submitted to NMFS on April 8, 1999. The BO, responding to that BA, is

expected in July 1999. Any decision on the proposed Running Bear LSR Enhancement Project would be in compliance with the pending BO.

15) The project decision would be in compliance with the EA To Change The Implementation Schedule For Survey and Manage and Protection Buffer Species (October 1998) and the associated Finding of No Significant Impact dated February 26, 1999.

This proposed action is local in nature, and potential adverse impacts would be short-term. Impacts were determined based on observation, professional training, data collection and experience of the interdisciplinary team of BLM natural resource specialists. Determining such environmental effects reduces the uncertainties to a level which does not involve unique risks. The design features identified in the EA would assure that no significant site-specific or cumulative impacts would occur to the human environment other than those already addressed ii the PRMP/FEIS.

Finding of No Significant Impact Determination

Based on the analysis of information in the attached EA, my determination is that a new EIS or supplement to the existing EIS are unnecessary and will not be prepared. The proposed action would not result in significant environmental impacts affecting the quality of the human environment greater than those addressed in the existing PRMP/FEIS.

Marys Peak Field Manager Acting _____ Date June 28, 99

Comments regarding this environmental assessment should be received by the Bureau of Land Management, Marys Peak Resource Area by 4pm, Wednesday, July 28, 1999.

TABLE OF CONTENTS

APPENDICES:

I. PURPOSE AND NEED

A. Background.

In July of 1996, the Marys Peak Resource Area of the Salem District BLM completed the *North Fork Alsea Watershed Analysis* (USDI-BLM 1996). This document, referred to as the *NFAWA*, outlined many management opportunities for restoring and enhancing ecosystem conditions. Among these opportunities were density management treatment (in managed stands less than 80 years old), coarse woody debris enhancement, and road restoration. The *NFAWA* also identified a corridor of federal lands that could provide a significant opportunity to promote terrestrial connectivity of older forest habitats across the watershed.

In June of 1997, an interagency team of specialists from the Forest Service, BLM and USFWS completed the *Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (RO267, RO268)* (USDA-FS and USDI-BLM 1997). This document, referred to as the *LSRA*, set priorities for treatment of federal lands designated as Late-Successional Reserves (LSR) across the landscape.

As a follow-up to the findings of the *LSRA* and *NFAWA*, the silviculture and wildlife staff began prioritizing areas within the LSR (unit RO268) that would benefit from density management and which would contribute to the provincial strategies for recovering LSR conditions across the landscape. Stand exam contracts were completed that focused on managed stands within the *NFAWA* corridor. Over 2,000 acres of forest stand data have been accumulated to date, with more stand exam areas identified. Road maintenance efforts have treated many acute trouble spots identified within the *NFAWA*, but only a few road closure/decommissioning projects have been accomplished. The proposed project described herein, is intended to implement a subset of specific management opportunities that were identified within the *NFAWA* and *LSRA* in a manner consistent with standards and guidelines outlined in existing planning documents described below.

B. Tiering

This environmental assessment (EA) is tiered to the *Salem District Record of Decision and Resource Management Plan (RMP, May, 1995) and the Salem District Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS, Sept., 1994).* The *PRMP/FEIS* analyzed broad scope issues and impacts within the President's direction to meet the need for forest habitat and forest products (page 1-1). The *RMP* provides a comprehensive ecosystem management strategy for BLM managed lands in the Salem District in strict conformance with the Northwest Forest Plan (*NFP*) which consists of the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (April 1994), and *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (April 1994). All alternatives presented within this Environmental Assessment (EA) describe various forest management, road

construction, and road decommissioning activities that are in compliance with the *RMP* and *NFP*.

This EA is also tiered to the *Western Oregon Program-Management of Competing Vegetation Final Environmental Impact Statement (VMFEIS, February 1989)* and the *Western Oregon Program-Management of Competing Vegetation Record of Decision (August 1992)*. The *VMFEIS* analyzed broad scope issues and impacts for an integrated vegetation management strategy consisting of various treatments. The Record of Decision identifies treatments and provides processes to meet vegetation management objectives (page 3) and resource management goals (page 33). This document is also tiered to the *Northwest Area Noxious Weed Control Program Final EIS (USDI, Dec. 1985)* and the ROD (USDI, April 7, 1986), and the *Supplement to the Northwest Area Noxious Weed Control Program (USDI, March 1987)* and the ROD (May 5, 1987). This EA will analyze vegetation management treatments such as site preparation and reforestation for harvest units.

This EA is a site-specific analysis. The *RMP* provides general management guidance.

The above documents are available for review in the Salem District Office. Additional information about the proposed Running Bear LSR Enhancement Project is available in the EA file, also available for review in the Salem District Office.

C. Management Objectives

The following general objectives guided the development of alternatives for this proposed project:

1. Comply with existing state and federal laws and legally binding management guidance, the *Salem District Record of Decision and Resource Management Plan*, (RMP; USDI-BLM 1995) and *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (USDI-BLM 1994).
2. Implement recommendations and apply any applicable exemption criteria outlined within the *Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (RO267, RO268)* (USDA-FS and USDI-BLM 1997).
3. Implement recommendations for young stand treatments and road restoration as outlined in *North Fork Alsea Watershed Analysis* (USDI-BLM 1996).
4. Ensure attainment of Aquatic Conservation Strategy Objectives (RMP, page 5-7).
5. Do not contribute to the need to list any plant or animal species.
6. Prescribed fires would be accomplished that meet management objectives, comply with the Oregon Smoke Management Plan, do not cause adverse resource damage and/or jeopardize the viability of Survey and Manage Species.

D. Late-Successional Forest Enhancement.

Late-Successional Reserves (LSR) are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems. These lands are to serve as habitat for late-successional and old-growth related species including the northern spotted owl (*NFP*, page C-11). Most of the federal lands designated as LSR within the northern Oregon Coast Range consist of forest stands less than 80 years of age, and thus are not considered late-successional forest. Silvicultural treatments in managed stands less than 80 years of age offer the opportunity to reduce overstocked density, alter tree species diversity, improve forest structural characteristics, and amend coarse woody debris conditions. Such treatments are believed to result in forest stands that more closely approximate the structure and function of a late-successional forest. As these treated stands age beyond 80 years, secondary structural characteristics (e.g. understory canopy development, large dominant trees) are likely to develop sooner than if no treatments were performed. Analysis of forest stands in the proposed treatment area using the stand growth and yield model *Organon* (Hann et al., 1997) shows that large tree diameters (> 24 inches) can be attained sooner, by as much as 50 years if treatments are performed. Thus, for a majority of forest stands within LSRs of the Oregon Coast Range, silvicultural treatments such as density management and coarse woody debris enhancement are viewed as a means to enhance late-successional forest conditions and accelerate attainment of these conditions across the landscape.

The *LSRA* provides guidance for determining which forest stand conditions would warrant silvicultural treatment and what types of treatments would be appropriate to achieve desired forest stand conditions. The proposed action and all alternatives described in this EA have been designed to be consistent with the guidance outlined in the *LSRA*.

E. Aquatic Conservation Strategy.

The Aquatic Conservation Strategy (ACS) as described in the *NFP* (pages B-9 to B-32), outlines several objectives for maintaining and restoring the function of aquatic ecosystems including, riparian areas, wetlands, and flood plains. Establishment of Riparian Reserves (*NFP*, page C-30) and completion of Watershed Analysis are key components of the ACS, designed to maintain and restore these unique ecosystems. The *LSRA* addresses the restoration and enhancement of forest stand conditions in LSRs including stands within Riparian Reserves. The *NFAWA* identified roads within this watershed that could be could be closed and/or decommissioned to recover hydrologic functioning and reduce sediment delivery to the aquatic ecosystem. The proposed action and all alternatives described in this EA have been designed to be consistent with the guidance outlined in both the *LSRA* and the *NFAWA* and are intended to contribute to watershed restoration objectives of the ACS.

F. Location of the Proposed Project

The proposed project would be located in Sections 32 and 33 of T. 12 S., R. 7 W, and Sections 3 and 5 of T. 13 S., R. 7 W., Willamette Meridian, Benton County, within the North Fork Alsea River watershed (a portion of Upper Alsea River 5th Field Watershed). The actions would occur on lands classified as Late-Successional Reserves (LSR) and Riparian Reserves within the Yew Creek and Parker Creek subwatersheds (tributaries of North Fork Alsea River). This area is located north of Highway 34, about 7 miles northeast of the town of Alsea, on the southwest slopes of Marys Peak.

G. Issues Concerning the Proposed Project.

The following issues concerning the proposed action were identified through Scoping and by an interdisciplinary team of natural resource specialists. Scoping is the process in which environmental issues and concerns related to the alternatives are identified early in the planning schedule. The process is open to the public, local governments, state governments, and affected federal agencies. The interdisciplinary team is composed of natural resource specialists representing various fields of science (see Section IV, List of Interdisciplinary Team Members).

1. Forest Productivity: What effect would silvicultural treatments have on maintaining long-term forest health, and stand biodiversity?

2. Soils: How would the alternatives affect long-term site productivity?

3. Water/Riparian: What effect would the proposed projects have on water quantity and quality as it affects beneficial uses? How would density management and associated activities affect attainment of the Aquatic Conservation Strategy objectives?

4. Botany/Fish/Wildlife: What effect would the proposed project and associated activity have on habitat and the species dependent upon it?

5. Fuels/Air Quality: What effect would the proposed project have on hazardous fuel build-up as a result of the harvest? How would air quality be effected by the potential prescribed burning for fuel hazard reduction?

Public involvement efforts during the Scoping process included the following:

A description of the proposal first appeared in the Salem Bureau of Land Management *Project Update* in June 1998 (then named Bear Cub Project). Three subsequent issues of the *Project Update* have also contained a description of the project. The *Project Update* is mailed to more than 900 individuals and organizations on the Salem District mailing list.

A letter asking for Scoping input and offering a public tour of the action area was mailed on

October 21, 1998 to 14 adjacent landowners and individuals or organizations who have expressed an interest in management activities in the resource area. A press release for the public tour was also sent to five local newspapers. The public tour of the project area was conducted on November 2, 1998, with only two participants attending. Comments expressed at the public tour are addressed in the list of issues stated above.

H. Authority for the Proposed Action.

The authority for this proposed timber sale is based upon the following legislation:

The Oregon and California Sustained Yield Act of 1937 (43 USC 1181a).
The National Environmental Policy Act of 1969 (42 USC 4321).
The Federal Land Policy and Management Act of 1976 (43 USC 1701).

I. Decisions to Make on the Proposed Project.

1. Do the project design features and mitigation measures create impacts greater than those analyzed in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* or *Western Oregon Program-Management of Competing Vegetation Final Environmental Impact Statement* ?
2. Should a new or supplemental environmental impact statement be prepared for the action alternatives?
3. Which, if any, additional mitigation measures should be incorporated into the proposed alternatives?
4. Which alternative best meets the intent of enhancing late-successional forest characteristics while protecting long-term health of ecosystems?

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Introduction.

This section describes the proposed action and reasonable alternatives identified by the interdisciplinary team that developed the Running Bear LSR Enhancement Project. Forest management treatments incorporated in the proposed action and alternatives conform with standard practices and general design features intended to reduce the environmental effects of timber harvest and related activities. These alternatives comply with the management direction outlined within the *Salem District RMP* and the Standards and Guidelines specified in the *Northwest Forest Plan*. Copies of these documents can be obtained in the Salem District Office.

B. Description of Alternative A: Proposed Action

The proposed action would employ a density management treatment and a combination of cable, ground-based, and helicopter yarding to harvest approximately 4.6 million board feet of timber in 14 units, totaling about 335 acres. Units are located in Sections 32 and 33 of T. 12 S., R. 7 W. and Sections 3 and 5 of T. 13 S., R. 7 W., in the North Fork Alsea watershed. The intent is to enhance late successional forest characteristics in relatively uniform dense conifer stands by density management and coarse woody debris creation. Road restoration, construction, decommissioning, and blocking would result in a net reduction of road miles as described below in item 3. Three or four moderate size (about 75'x100') helicopter landings would be constructed adjacent to roads or within existing open areas to facilitate helicopter yarding and servicing. Unit 4, a portion of Unit 3, and all of Unit 13 (about 110 acres total) would be yarded by helicopter. All other units would be yarded by either skyline (210 acres) or ground based systems (15 acres). Most of the operations associated with harvest would be seasonally restricted to the period of May 1 to October 31. Further details on seasonal restrictions are addressed in Design Features for Soils. Refer to Appendix A, for a map of Alternative A.

1. Density Management.

Approximately 335 acres of young dense conifer forest stands would be treated in 14 separate units. Density management would be accomplished by selectively cutting all Douglas-fir and western hemlock (target conifers) with diameters (measured at breast height, dbh) that fall within limits described for each unit in Table 1. This method would ensure highly variable spacing of residual trees at densities ranging from 38 to 99 trees per acre (tpa). This variability of residual tree density is expected to produce small gaps, clumps, openings or patches of low density (<50 tpa and <½ acre) that would amount to no more than 10 percent of the total treatment area (about 35 acres). Some target conifers with a dbh above the treatment limit would need to be cut for roads, landings, and yarding corridors (15 foot width). However, trees cut for these purposes that have a dbh above 20 inches would be retained on site to meet coarse woody debris (CWD) objectives for these units. Some target conifers within the diameter limit would be specially marked and reserved from harvest to

retain their unique structure and/or benefit wildlife or botanical species (about 1 tpa). Also, some target conifers having a dbh above the diameter limit but less than 20 inches would be specially marked for harvest to achieve desired stand density and to provide release of adjacent dominant individual conifers (about 1 tpa). Trees specially marked for reserve are expected to balance out with trees specially marked for harvest, such that the desired residual stand density (from Table 1) is achieved on a per treatment unit basis. All minor conifer species (e.g.; western red cedar, pacific yew) and all hardwood species would be reserved from harvest, unless felling these trees is needed for operability, safety considerations or for consideration of openings or CWD.

Treatments would occur within both LSR and Riparian Reserves and are intended to accelerate the structural development of these stands and to approximate the structure and function of a late-successional forest. All perennial and intermittent streams identified within the project area would be buffered with "no-cut" boundaries ranging from about 25 to 100 feet. These "no-cut" areas would be marked on the ground by resource specialists and are intended to function as stream protection buffers to significantly reduce or avoid impacts to aquatic resources from harvest activities. Cable yarding systems may require a few yarding cables to be located in stream protection buffers, but no yarding would occur across these buffers.

The units identified for density management treatment represent about 43 percent of the total stands within the project area having similar age and structural conditions which were evaluated for treatment. Thus, this proposed action has incorporated "no-treatment" areas totaling well above 10 percent, where either: (1) stand density and composition appear to be adequate, or (2) where sensitive slopes or site conditions precluded treatment.

Table 1. Summary of Density Management Treatments for Alternative A**.**

Units	Acres [1]	Stand Age	Existing Conifers [2]	Conifers Removed [2]	Remaining Conifer [2]	Diameter Limit [3] (inches)
1,2,3,4	80.9	42	274	189	85	7.0 - 14.0
5	8.4	42	144	97	47	7.0 - 17.0
6	1.9	34	155	117	38	7.0 - 13.0
7	20.4	39	256	166	90	5.0 - 13.0
8	11.0	36	452	399	53	5.0 - 13.0
9	4.2	40	465	366	99	5.0 - 11.0
10	86.9	48	171	94	77	7.0 - 16.0
11	11.6	42	238	178	60	7.0 - 13.0
12	31.0	54	169	114	55	7.0 - 19.0
13	72.0	37	255	184	71	7.0 - 13.0
14	7.0	37	400	352	48	5.0 - 11.0
Totals	335.0	-	-	-	-	-

1. The size of each treatment unit and total treatment area has been estimated, and may vary by less than ±5%.
2. Conifers considered for treatment are Douglas-fir and Western Hemlock, presented as trees per acre.
3. All designated conifers with having a dbh (diameter at breast height) within the Diameter Limit would be cut.

2. Coarse Woody Debris Enhancement

Coarse woody debris (CWD) enhancement would be achieved by a combination of strategies #2 and #3 as described in the *LSRA*. These strategies serve as guidelines used in consideration with site specific factors (e.g. stand age, adjacent landscape conditions, subsequent treatment possibilities) for development of CWD prescriptive treatments outlined in Table 2. Moderate accumulations of large down logs in advanced stages of decay can be found in most units, while few large snags (dbh > 20 inches) can be found in any units. New inputs of CWD would be achieved by:

- indirect harvest activities (e.g. breakage, limbs and tops, trees felled but not harvested),
- post-harvest wind throw (3 winters of exposure, post harvest),
- bark beetle kill in response to new accumulations of slash and wind throw, and
- post-harvest CWD creation (4 years after harvest)

Post-harvest monitoring of the size and condition of fresh CWD contributed by harvest activities, wind throw, and beetle kill would be required to precede efforts to create CWD. All units would receive fresh input of CWD equivalent to 1.5 to 3 trees/acre of average residual tree size. Trees

larger than the average stand dbh (approaching 20" dbh) would be targeted for CWD selection. For most units, at least half of the trees selected for CWD creation would be left as snags (i.e. girdled at dbh, girdled within 1/3 of tree top), while the remainder would be felled immediately to create down logs. Trees selected for CWD creation would be both clumped and scattered across the units. Up to 20 percent of the CWD creation might occur outside of harvest unit boundaries, but within the same stand where forest conditions warranted treatment. This allows CWD creation to occur in portions of stands where harvest or yarding was not feasible but where stand conditions were appropriate for treatment.

Table 2. Summary of Coarse Woody Enhancement Prescription.

Units	Existing Conditions	Objective	Desired Input snag	down
1,2,3,4 5,7,11	adequate legacy of large old CWD, a few remnant old growth trees and snags, some root rot pockets developing.	input of hard snags/logs away from rot pockets, future input desirable when dbh increases	1	0.5
6,8,9	relatively young stand with small diameters, but adequate legacy of large old CWD, few root rot pockets, adjacent old-growth	input hard snags/logs away from rot pockets, future input desirable as dbh increases	0.5	0.5
10	legacy of old CWD is lower than expected and widely scattered, few root rot pockets, adjacent older stand at west edge of unit	few rot pockets favors snag input, future input unlikely in portion of unit below road 12-7-32.1	2	1
12	legacy of old CWD is lower than expected, but higher in adjacent older forest stands, a few root rot pockets developing	larger dbh and low legacy CWD favors down log input, future input not expected due to adjacent stands	1	2
13,14	young stand with small diameters, but very high amounts of legacy CWD, few rot pockets.	high levels of legacy CWD favors snag input, small dbh favors minimal input now, future input desirable	1	0.5
Note: Desired Input is expressed as trees per acre created in the stand. Post-harvest processes (wind throw, beetle kill, etc.) would be considered prior to input.				

3. Road Work.

Approximately 950 feet of road would be newly constructed, 290 feet would be reconstructed or renovated, and 49,900 feet of existing open road would require spot improvements for hauling as presented in Table 3**.** New and reconstructed roads would receive minimal surface preparation. The new road construction in Unit 12 (road P-1) would be rocked to extend the season of haul. New roads (except for P-1) and the majority of renovated/reconstructed roads would be ripped or water-barred and seeded after use. Following harvest operations, these decommissioned roads may also be blocked with obstacles (e.g.; dirt berm, tank-trap, stumps, rocks) to minimize resource damage and wildlife harassment by discouraging unauthorized off-road vehicle use. Improvements to existing roads would include: (1) constructing drain dips and adding rock at creek crossings to reduce the flow of sediment into streams, and (2) adding rock at locations that currently have insufficient rock depth for haul. Improvements would occur prior to hauling and would be ongoing as needed during hauling. Following the harvest activities, 9,410 feet of road (including new, reconstructed, and some existing road) would be decommissioned, while 16,925 feet of road would be blocked or gated representing a net reduction of 25,100 feet (4.75 miles) of currently open road . One gate would be installed on 12-7-32.0 prior to harvest operations, and one existing gate on Oregon Department of Transportation land would continue to provide closure of 13-7-10.1 and the proposed spur P-1.

Table 3. Summary of Road Construction and Use for Alternative A and B.

Road Number	Altern.	Length (feet)	Road Action	Road Type	Final Status	Note
P-1	A/B	435	N	S-P	blocked	Unit 12, behind gate, rocked
P-2	A/B	515	N	S-P	decomm	Unit 10, no rock
P-3	A/B	290	R	S-P	decomm	Unit 10, no rock
P-5	B	1,800	R	S-P	decomm	Unit 13, no rock
P-6	B	1,100	N	S-P	decomm	Unit 13, no rock
P-7	B	950	N	S-P	decomm	Unit 4, behind gate, no rock
12-7-33.2	A/B	500	I	S-P	blocked	Unit 3, no rock
13-7-4.0 12-7-33.0	A/B	15,000	I	Perm	open	main haul route (Yew Creek Road), existing agreements preclude closure
12-7-28.0	A/B	900	I	Perm	gated	Unit 5, behind gate, near power line.
12-7-32.0	A/B	5,490	I	Perm	gated	gated to allow for ROW power line access.
12-7-32.1	A/B	8,600	I	Perm	decomm	Unit 10, behind gate, decomm on most
12-7-32.3	A/B	1,550	I	Perm	gated	Unit 4, behind gate from -32.0

12-7-33.1	A/B	2,500	I	Perm	gated and blocked	Unit 4, behind gate from -32.0, blocked @13-7-28.0
13-7-10.1	A/B	5,570	I	Perm	gated	Unit 12, existing gate on ODOT
13-7-18.0	A/B	9,400	I	Perm	open	Unit 13
13-7-5.2	A/B	400	I	Perm	open	Unit 13
Altern.: A= roads needed for Alternative A, B= Alternative B roads, A/B= roads common to both alternatives; **Road Action**: N= new construction, R= restoration/reconstruction, I= spot improvements; **Road Type**: S-P= semi-permanent surface, Perm= existing permanent surface; **Final Status**: decomm= decommissioned.						

4. Prescribed Burning

A post-harvest assessment of logging slash would be accomplished on all units, particularly those that lie adjacent to open roads. Burning of selected slash piles, primarily those near roads and landings, may be deemed appropriate to reduce hazardous fuels, reduce competing understory vegetation, create a seed bed for conifer re-establishment, and stimulate understory species development. The burning would be done with manual ignition in a manner that minimizes the consumption of duff and litter layer and damage to residual trees. It is expected that less than 1/10th of the total harvest unit area would be subject to prescribed burning.

5. Special Forest Products.

Special forest product permits for floral greenery, such as Oregon grape, sword-fern, and salal, and transplants such as vine maple, would be available by permit before and after harvest operations as appropriate for LSR and Riparian Reserve designated lands in this portion of the Marys Peak Resource Area. If firewood is present on the landings after completion of the logging contract, permits may be made available to the public. Prescribed burning would be delayed one or more seasons in order to accommodate fire wood cutting.

6. Monitoring Plan.

Two different types of monitoring are likely to occur following implementation of this proposed action. As a requirement of the Salem District *RMP* , yearly efforts are made to monitor the implementation of the various projects by selecting a representative sample of each project type conducted in conformance with the *RMP*. Data gathered by timber sale contract administration and by monitoring implementation of terms and conditions related to the pertinent Biological Opinion would serve as the basis for such monitoring. This proposed project may or may not be selected for plan conformance monitoring.

Additionally, there are several elements of this project that have a specifically designed monitoring

component. Four monitoring items have been designed as part of the adaptive management process to gather supplemental information that will assist in future project development within LSR and Riparian Reserve land-use allocations. The first two of the following four items would be required for full implementation of the proposed action, while the other two would be implemented dependent on available time and funding. Monitoring items designed for this project are described in more detail within Appendix D and include:

- Post-harvest assessment of coarse woody debris (CWD) accumulations from harvest activities, Winthrop, and prescriptive treatments.
- Post-harvest assessment of logging slash and hazardous fuels build-up.
- Pre- and Post-harvest sample plots of stand conditions in both LSR and Riparian Reserve allocations (follow-up of stand exam data and photo plots).
- Pre- and Post-harvest photo plots of selected Survey and Manage plant and animal sites within or adjacent to harvest units.

C. Alternative B: No helicopter yarding, reduced acres treated.

The following project design is described for Alternative B, only where it differs from Alternative A.

This alternative would perform a density management treatment on about 325 acres (Unit 4 reduced by about 6 acres from Alternative A) with about a 100 mbf reduction in volume. All units would be yarded with skyline (est. 304 acres) or ground based systems (est. 21 acres). This would require building 2,050 feet of new construction and 1,800 feet of reconstruction in addition to the road construction outlined for Alternative A (see Table 3). The additional road construction for Alternative B would provide landings and haul routes within Unit 4 and 13 for skyline and ground based yarding systems instead of helicopter. No helicopter landings would be constructed. Refer to Appendix A, for a map of Alternative B.

D. Alternative C: No Silvicultural Treatments (No Action).

This alternative would not perform density management, coarse woody debris creation, or road decommission and closure. Current forest stand conditions would be left to develop without intervention. Current road problems areas would be left untreated or conditions would be treated to the extent possible within current maintenance program.

E. Alternatives Considered but Rejected.

Additional forest stands in Section 3, 32, and 33 were considered for treatments but eliminated from further consideration after field review and discussion by the Interdisciplinary Team. Treatments to stands in the north and east half of Section 3 were eliminated due to the very steep slopes, excessive road building needs, and safety issues related to Marys Peak Road. Several younger aged stands (20-35 years of age) in Section 33 were eliminated due to marginal timber value and additional road

building needs. Some of these younger stands may become the target of a future treatment proposal. Whereas, the older stands (35-60 years of age) that have been dropped from consideration in this action will not likely receive any treatment within the next 20 years due to one or more of the following reasons:

- some stands lie on sensitive resource sites (e.g. steep slopes, riparian habitats, high water tables) where treatment with conventional harvest/yarding systems would risk resource impacts beyond those anticipated by current plans and guidance.
- some stands already exhibit structural development such that treatments would not appreciably enhance their development toward late-successional forest conditions.
- some stands that would benefit from a treatment lie too far away from existing roads such that the cost/benefit of building roads to accomplish the treatment was considered unacceptable by the interdisciplinary team.

F. Project Design Features.

Project design features are specific constraints placed on the design and implementation of this project for the purposes of mitigating potential impacts to natural resources. The design features are organized by the resource issues for which they are designed to provide mitigation. Unless otherwise noted, these design features would apply to both Alternative A and B.

1. Forest Productivity

a). Reserve at least 10 percent of available treatment age stands from harvest.

b). Include up to 10 percent of treatment area in heavy thinning patches or openings that are 0.25 to 1.0 acres in size.

c). Retain all existing down logs and snags, unless they pose safety hazard or affect operability and access.

d). Do not fell any trees 20 inches in diameter or larger, unless they pose a safety hazard, lie within approved roads, skid trails, or yarding corridors where they affect operability or for creation of CWD or openings. All trees this size that are felled for these purposes would be retained on site to meet coarse woody debris needs.

e). Accomplish density management treatment by thinning according to diameter limit marking guidelines; no harvest of orange painted trees and harvest only blue painted trees within units.

f). Retain tree species diversity including minor conifers and hardwoods. Such trees would be reserved except where they pose a safety hazard, are within right-of-ways, removal is necessary to facilitate logging or for creation of CWD or openings.

g). Retain understory conifers less than 5.0 inches dbh where possible.

h). Trees less than 7.0 inches that are felled to facilitate logging would not be yarded out.

i). Apply density management treatments inside of Interim Riparian Reserve widths as appropriate for enhancing late-successional forest structure, while avoiding ground disturbance that could impact adjacent water courses.

j). A seasonal restriction for bark slippage is incorporated into time line of operations described in design features for Soils.

2. Soils

a). Alternative A will accomplish yarding by use of helicopter (110 acres), cable (210 acres), approximately 20 acres of cable yarding would require multi-span yarding to achieve one-end suspension and ground based systems (15 acres). Ground based yarding can be accomplished using either: harvester/forwarder equipment or small crawler tractor type equipment.

b). Timber felling and cable-based yarding systems would generally be allowed year around, however, temporary shut downs in the Spring (April 15 to July 15) would likely be imposed to avoid excessive bark slippage.

c). Timber hauling would be seasonally restricted to the period of May 1 to October 31 on all units, except for Unit 12 (Section 3) where no seasonal restriction is intended. During the period of November 1 to April 30 no hauling would be allowed on Units 1-11, 13, and 14, unless soil and water resource impacts were determined to be minimal by BLM specialists (Soil Scientist or Hydrologist). At any time of the year, yarding and hauling may be shutdown, to avoid excessive soil and water resource impacts.

d). Constrain ground-based harvest systems to minimize impacts to soils. If the plan is to use ground based yarding, it is strongly suggested that the timber be left standing as close to the time of yarding as possible. Maintain slash and logging debris on skid roads during and after yarding to reduce soil disturbance and compaction. Consider requiring use of harvester/forwarder system to meet this criteria.

e). In ground-based yarding areas, if using harvester / forwarder system:

- Require that logs be transported free of the ground. The equipment shall be either rubber tired or track mounted, all wheel drive, capable of self loading or unloading, and have rear tires or tracks greater than 18" in width. Forwarder yarding corridors shall be spaced a minimum 125 feet apart and less than 15 feet in width. Unmerchantable material shall be placed upon the forwarder yarding corridors and machines would walk on the slash.
- Harvester corridors shall be spaced 60 feet apart and less than 15 feet in width. Harvester corridors shall be used to fall trees perpendicular to the yarding corridors. Harvester corridors would be located between forwarder yarding roads.
- Yarding would only be allowed during periods of low soil moisture between July 15 and October 15 of a given calendar year. Operations may occur beyond this period if the following conditions are met:

- **!** Machines are kept on areas with heavy slash accumulations in order to distribute the weight over a large area and minimize top soil disturbance. Placement of additional slash on harvester/forwarder trails would probably be necessary in most cases.
- **!** The area is narrow enough to be harvested with one pass of the loaded forwarder.
- **!** The operation is frequently monitored (at least every other day) to ensure that significant soil compaction does not occur.
- **!** Operations would be shut down at the first indication of significant soil compaction.

f). In the ground based area if crawler tractor equipment is used: Equipment should be required to operate on top of slash as much as practical and utilize pre-designated "skid roads" spaced at least 150 feet apart. Ground based yarding shall only be allowed during periods of low soil moisture, generally between August 1 and October 15 of a given calendar year. Ground based yarding equipment should be limited to small crawler tractors less than 8 feet in width equipped with an integral arch.

g). Road construction would be restricted to periods of dry weather and low ground moisture, within May 1 to October 31 operational time line.

h). Newly constructed and renovated roads would be kept narrow to minimize disturbance to soils and vegetation.

i). Selected road segments (including most new construction and reconstructed roads) would be decommissioned/blocked, consistent with recommendations for decommissioning and road closure as presented within *NFAWA* (USDI-BLM 1996) (see Table 2).

j). Decommissioning selected roads could include: pulling culverts and restoring stream beds, water-barring, ripping road surface, blocking access, piling slash, and grass seeding exposed surfaces. Grass seeding efforts would make use of red fescue (certified as noxious weed-free) at the rate of 40 lbs/acre.

k). Divert road runoff away from existing water courses, headwalls, or fill areas on slopes over 60 percent.

l). Construct and rock three helicopter landings and one service landing each approximately 0.25 acres in size (Alternative A only). To the extent possible, locate these landings in existing disturbed sites or open areas.

3. Water/Riparian

a). Implement Best Management Practices (BMPs) for protection of water quality and beneficial uses.

b). Identify and mark all stream courses within or immediately adjacent to proposed treatment units.

c). Designate a "no-cut" buffer around perennial and intermittent streams to function as Stream Protection Areas. Criteria for marking "no-cut" areas should consider potential impacts to riparian ecosystem functions and aquatic resources. These criteria may include:

- **!** a minimum width of 25 feet from active channels.
- **!** above significant slope breaks (above point of actively eroding slopes that are contributing sediment to streams).
- **!** above active flood plain or high water tables (flat mushy soils, standing water, skunk cabbage).
- **!** above flood prone areas (2 times maximum depth at bank full level).
- **!** 50 feet from perennial streams that are at risk for temperature increases due to the harvest action (i.e. northern aspect, low topographic relief, vegetation providing significant shading).
- **!** sensitive stream segments, or sand bed channels, or channels with high residual impacts (e.g. bank erosion, incision, heavy fine sediment load) should receive extra protection.
- **!** riparian areas that currently provide good quality habitat (or known sites) for Survey and Manage plants and animals would be excluded from harvest units.

d). Directionally fall away from streams all trees within one tree height of stream protection areas ("no-cut buffers"). Where a cut tree does fall within a no-cut buffer, the portion within the buffer will remain.

e). See Soils above for Design Features that would minimize impacts resulting from soil disturbance and hauling from affecting water quality and stream habitat.

4. Botany/Fish/Wildlife

a). See Water/Riparian design features for "no-cut" buffer considerations that would protect the aquatic habitats and species.

b). Determine extent of fish presence in streams adjacent to treatment units and assess if adjustments are needed to "no-cut" stream protection areas.

c). Incorporate design features to benefit fish species that may be provided through a Biological Opinion from NMFS or from technical assistance from other fish specialists (ODFW, NMFS).

d). Conduct harvest operations and associated activities in conformance with applicable Biological Opinion (#98F361) concerning listed wildlife species. Pertinent Terms and Conditions for this BO include:

- **!** A daily use restriction on the operation of power equipment would be

required from April 1 through September 15 , where equipment use would be restricted to the time period beginning two hours after sunrise and ending two hours before sunset,

- ! No blasting shall occur during the time period January 1 through September 30, unless authorized upon completion of a reinitiated consultation,
- ! Helicopter yarding would not be allowed during the period of April 1 to August 5 (Alternative A only).
- ! If harvest units contain trees that average ½ site potential tall (110 feet) and afford adjacent canopy protection to trees with nesting structure for marbled murrelets, then no portion of the harvest units shall be within 300 feet of trees with such nesting structure.
- ! Notify the Resource Area Biologist if any federally listed wildlife species are found occupying stands identified for treatment.

e). Retain existing remnant old-growth, down logs, and snags except where they pose a safety risk, or affect access and operability. Any trees felled or moved for these purposes would remain on site within treatment units.

f). Manage known active red tree vole nests by retaining nest trees and trees directly adjacent to the nest tree.

g). Protect sites for Survey and Manage (S&M) mollusk species by:

- ! protecting all *Prophysaon dubium* and *Hemphillia sp.* sites with 50 to 100 foot "no cut" buffers or exclude sites from treatment units.
- ! protecting all *Prophysaon coeruleum* sites by retaining at least 60 percent canopy closure within 50 feet of the site, or by excluding sites from treatment unit boundaries.
- ! allowing post-harvest prescriptive treatments for coarse woody debris creation (felling, girdling) within protected sites only if 60 percent canopy closure can be maintained within 50 feet of site.

h). Supplement diameter limit prescription by reserving additional trees (dbh within diameter limit) for S&M plants and wildlife species and coarse woody debris (significant defects) retention (about 1 to 5 tpa).

i). Supplement diameter limit prescription by painting blue on trees (dbh above diameter limit but less than 20") to be harvested to promote localized openings designed to enhance habitat variation and biodiversity (about 1-5 tpa)

j). Manage Survey and Manage fungi species (*Phaeocollybia sipei, P. piceae, Ramaria ariospora*, and *Helvella compressa*) and Protection Buffer species (*Otidea leporina and Sarcosoma mexicana*) by locating additional leave trees around these sites, or by excluding these sites from treatment unit boundaries.

k). If additional special attention species or special status species are discovered on site, implement appropriate mitigation as described within the *RMP* on pages 28-33.

l). Construct a heavy duty gate on 12-7-32.0 near it's junction with -33.0 prior to harvest operations. This gate would allow for restricted access during harvest

operations, authorized access to the powerline right-or-way, reduce risk of fire danger, and reduce disturbance to wildlife resources following harvest. Non-motorized access would be allowed following harvest operations which should benefit recreational opportunities in this area.

m). Grass seed all exposed soil areas from road construction, road renovation or ground skidding operations with 100% Oregon certified red fescue at a rate of 40 pounds per acres.

n). Reserve from cutting all minor tree species including Noble fir, western red cedar, Pacific yew trees and all hardwoods species.

5. Fuels/Air quality

a). Debris cleared during road construction/renovation would be scattered along the length of the rights-of-way. Avoid creating large accumulations and piles of debris that may later pose higher than necessary fire hazards. Do not allow any debris to be piled against trees or snags.

b). Block selected roads to reduce fire risk as well as minimizing disturbance, erosion, and sediment-laden runoff from the road surfaces.

c). Restrict motor vehicle access near harvest areas during the fire season in the first year following harvest activities while fuels are in the "red needle" stage.

d). As an alternative to burning piles and accumulations of slash in some areas, consider scattering slash on surfaces of roads planned for closure. This would serve to reduce sediment runoff and discourage OHV use.

6. Summary of Seasonal Restrictions.

Many of the activities associated with this proposed action have been designed to occur during specific periods during the year. The intent of these seasonal restrictions is to minimize potential impacts to soils, streams, the residual forest stand, and listed wildlife species. Table 4 provides a summary of the operational time lines for those project activities that have the greatest potential to cause impacts these resources.

Table 4. Summary of Seasonal Restrictions for Proposed Project Activities.

Activity	Operational Time lines [1] Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec
Felling	Available 14 15 - - - - - - - - - - 15 16 Available
Road Building	- - - - - - - - - - - - - - 30 1 Available 31 1 - - - -
Hauling (1-11,13,14)	- - - - - - - - - - - - - - 30 1 Available 31 1 - - - -
Hauling (unit 12 only)	Available
Helicopter Yarding	Available 31 1 Not Allowed 30 1 Available
Cable Yarding	Available 14 15 - - - - - - - - - - 15 16 Available
Ground Yarding	- 15 Available 15 - - - - - - -
Power Equipment [2]	daily use restricted to period beginning two hours after sunrise and ending two hours before sunset, from 1 April to 15 September; State fire danger rules apply during fire season; no seasonal restriction intended.
CWD Creation	Available 31 1 Not Allowed 5 6 Available
Prescribed Burning	Available 31 1 Not Allowed 5 6 Available

1. **Operational Time lines**: Available = time period an activity is allowed; Not Allowed = time period that an activity is **NOT** allowed; - - - - - = time period that conditional operation is allowed (see Design features for Soils, Wildlife, Fuels/Air Quality).
2. Power Equipment is intended to mean all motor driven equipment (e.g., chainsaws, yarder, track vehicles, helicopter) that produces noise above normal forest ambient levels

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT and ENVIRONMENTAL CONSEQUENCES.

A. Introduction

This section describes the environmental features affected by the proposed action and the

environmental consequences which would result from implementing this action or the alternatives. This information is summarized in Appendix B. Resource values are not described in this section if there are no anticipated site-specific impacts, site-specific impacts are considered negligible, or the cumulative impacts described in the PRMP/FEIS are considered adequate.

In accordance with statues, regulations, and executive policies, some resource values and uses must be reviewed in all environmental assessments. A list of these resources and the results of the review for the project area are presented in Appendix B.

B. General Information

The proposed project would be located in Sections 32 and 33 of T. 12 S., R. 7 W, and Sections 3 and 5 of T. 13 S., R. 7 W., within the North Fork Alsea River 6th field watershed (north half of Upper Alsea River 5th Field Watershed). The actions would occur within the Yew Creek and Parker Creek subwatersheds (tributaries of North Fork Alsea). This area is located north of Highway 34, about 7 miles northeast of the town of Alsea, on the southwest slopes of Marys Peak.

The elevation range within the project area is from 1,300 to 2,500 feet, with all but unit 12 above 1800 feet. The project area has numerous small streams and ridge lines with multiple aspects. Some of the slopes in the project area very steep, however, slopes within the harvest units range from 0 to 80 percent.

The Project Area was partially burned over during fires in the 1850s and in 1934. The Alsea Mountain Fire of 1934 affected more of the project area than the earlier fires, and it also set in progress an extensive salvage logging effort that moved through the project area starting in the late 1940s (see *Watershed Analysis - North Fork Alsea River*). All of the proposed treatment units are stands that were previously salvaged logged or clearcut at least 40 years ago. The timber harvested in those actions was primarily old-growth Douglas-fir. A review of old aerial photos indicates that those logging activities resulted in extensive disturbance to soils and stream channels. The photos revealed that the logged areas had a high density of skid roads and cable corridors with prominent patches of exposed soils. The beaver ponds in Section 33 along Yew Creek were formed by mass wasting events that occurred after the adjacent hillsides were logged. The old photos also show well distributed accumulations of large CWD, some remnant old trees from the previous stand, and few widely scattered large snags. Portions of these regenerating forest stands were pre-commercially thinned in the mid 1970s.

A power line runs through portions of the proposed density management project in Sections 32 and 33 and just outside of unit 12 in Section 3. Most of the area underneath the power line is maintained to be clear of vegetation throughout its length toward Marys Peak mountain.

C. Forest Productivity (Issue 1).

1. Forest Productivity Issue:

What effect would silvicultural treatments have on forest structure, long-term forest health, and stand biodiversity?

2. Affected Environment for Forest Productivity

The project area is comprised of several plant associations all of which belong to the western hemlock plant association group as those similarly described for the Siuslaw National Forest by Hemstrom and Logan (1986). A description of all the plant associations within the western hemlock series that were found within the project area is included within the Botany report (see Analysis File). The proposed treatment units appear transitional between the western hemlock series moist and dry environments as described in the LSRA.

The proposed treatment area (335 acres) lies within an 800 acre patch of young, dense, homogenous Douglas-fir forests with few areas of significant western hemlock density (Unit 13). For a complete description of vegetation history in the North Fork Alsea River Watershed refer to pages 32-39 in the *North Fork Alsea River* watershed analysis. The forest stands range in ages from 36 -54 years with a past history of fires up to the1930s and logging activities since the 1940s to the present . The burning associated with fires and logging efforts eliminated nearly all snags and much of the down wood in these units, creating a coarse woody debris (CWD) "deficit" situation. It is likely that many of the stands regenerated naturally following fire, or were planted or aerially seeded in high densities following logging activities since the 1960s.

Portions of the proposed density management treatment units have been pre-commercially thinned (PCT) between the ages of 12 to 24 in Sections 32 and 33. The PCT further eliminated competing species including naturally regenerated hemlock and western red cedar as the primary objective was for timber production. Many of the stands were PCT'd down to 212-300 trees per acre in 1974. This created relatively homogenous Douglas-fir stands supporting high relative densities (in excess of 50%), where growth is reduced due to competition. Increasing inter-tree competition is evident in decreasing crown ratios and decreasing diameter growth.

Current stand conditions within the treatment units is based on data from formal stand exams and walk-through examinations. Some pertinent stand conditions derived from these surveys are:

- average diameter at breast height (DBH) of the trees within the units ranges from approximately 9.0" to 16.0";
- average number of trees per acres ranges from 132 to 546 ;
- average amount of basal area/acre ranges from 123 to 237 square feet;
- Curtis Relative Density (an index to the level of competition among the trees in the stand) ranges from 43 to 81.
- average canopy closure estimated to be 80%.

The current stand densities are approaching or are above the upper limit (Relative Density 55-60) of where individual tree vigor and stand growth are reduced due to competition. Thinning dense uniform stands such as these to a wider or variable spacing would provide the remaining trees more of an opportunity to differentiate without stagnating.

Species diversity within these stands, although minimal, is currently beginning to increase at a rate that is much slower than what occurred in the early seral stage. Other diverse species such as Red alder, Bitter cherry, Ponderosa pine, Noble fir, Pacific yew, Bigleaf maple, Western red cedar, Pacific dogwood and Chinquapin are found in trace amounts particularly in Sections 32 and 3. Occasional larger-sized (>30 inches DBH) and larger crowned Douglas-fir trees (mostly old-growth remnants) do exist throughout the proposed treatment area and are reserved from harvest.

The understory component of these stands varies from thickets of vine maple to scattered or no understory in areas with complete canopy closure. When the canopy closes or fills in, most understory plants receive barely enough light to sustain themselves and are eliminated from the stand. A couple of areas within the proposed treatment area are dominated by shade-tolerant coniferous species (Western red cedar and Western hemlock) regeneration. Most of the understory Douglas-fir has already developed flat shade needles for survival and are not expected to respond well to thinning. The ground cover is mostly dominated by sword fern, Oregon grape and salal.

Total coarse woody debris (CWD) levels (includes both down wood and snags) are in the low end of the range for managed plantations (see *LSRA*, page 65, Table 14). Target quantities for downed logs in unmanaged stands range from 525 to 1979 ft^3/acre with an average of 1102 ft^3/acre (LSRA, page 61, Table 12). The down log data collected from transects from during stand exams show a range from 244 to 4,957 ft^3/acre. These logs were predominantly made up of decay classes 3, 4 and 5 (advanced decay stages). The average volume of down wood in the proposed treatment area is approximately 2,620 ft^3/acre which falls within the current range of existing down log volumes in plantations. Target quantities for standing snags in natural stands <80 years old range from 3 to 31 snags/acre with a low average of 7 (LSRA, page 59, Table 11). The general conditions of snags in these stands appears to be low quantities in small size classes. Sixty-eight percent of survey plots (120 out of 177 plots) had no snags present. The snags that were encountered usually had small diameters and included some hardwoods.

Threats to forest health noted within the proposed action area include:

- Laminated root rot**,** caused by the fungus *Phellinus weirii*, a native root pathogen that is a natural part of many forest ecosystems, affecting less than 5 percent of the treatment area;
- Armillaria root rot disease, often affecting trees that are suppressed and are under stress from tree-to-tree competition.

- Hemlock Dwarf Mistletoe, which has been found in scattered amounts within the project area on western hemlocks mostly in Sections 32 and Section 5;
- Swiss needle cast**,** which is a native foliage disease caused by the needle fungus, that was not observed within project units but was noted in some adjacent young Douglas fir plantations;
- Douglas-fir beetle, which is endemic to Douglas-fir forests in the Pacific Northwest, and showed minor evidence of presence in and adjacent to project areas;
- Wind throw, which can be locally severe following harsh winter storms, however appeared to be minimally present in localized areas within the project area;
- Annosus root and butt rot, found especially to affect W. hemlock, occurs through wounds on live trees and infected stumps through the roots;
- Bear damage has been found several miles west of the project area in thinned stands and old bear scarrings in unit 10. Thinning these stands could make these trees more palatable to bears.

Root rot fungi are disturbance agents that generally increase ecosystem diversity by creating small openings for secondary species. Mistletoe shoots appear on infected branches of western hemlock, creating stem swellings, witches'-broom, dead tops, flagging branches and branch mortality. Infected trees may eventually die. The unique branch structure creates good hiding cover and potential nesting structure for a variety of wildlife species. Swiss needle cast disease rarely causes mortality, but it does reduce tree growth significantly. Root rot pockets and windstorms which create patches of down trees can provide excellent sites for infestations of Douglas-fir bark beetles. At low or endemic levels, bark beetles usually infest scattered dead or dying trees, including blow down, fire-scorched trees, and defoliated trees. When the number of susceptible Douglas-fir trees greater than 12 inches in DBH exceeds three per acre, the numbers of bark beetles produced is sufficient to cause infestation and mortality of standing live Douglas-fir trees (Hostetler and Ross 1996). Trees under 12 inches DBH are considered too small since they dry out and become unsuitable for beetle larvae before the beetles can complete their life cycle. Trees felled to provide coarse woody debris, if large enough, may attract beetles, resulting in additional mortality in subsequent years. Long term management of Douglas-fir forests by periodically thinning young stands, including modest inputs of CWD, and other preventive practices offer the best method of minimizing bark beetle damage.

3. Environmental Consequences for Forest Productivity: Proposed Action

The proposed action would modify existing stand structure and composition of the proposed treatment units. The treatment units represent only 43.8% of the contiguous treatable patch (about 800 acres) within this seral stage of stand development (56.2% of available stands would be untreated). The proposed treatment is considered a moderate to light density management removal which would include about 10% of the treatment area (about 35 acres) in heavier overstory removal resulting in small gaps and areas of reduced stand density (below 50 tpa). Overall tree species diversity would be maintained or enhanced by treating only the Douglas-fir and Western hemlock

and leaving all other species as leave trees. The variable spacing achieved by the silvicultural prescription would promote structural complexity, horizontal and vertical diversity, wind-firmness, release of existing regeneration, and creation of numerous small openings. The resulting increase in available light to the stand would stimulate understory initiation, increase DBH, and build larger crowns and limb diameters on residual trees compared to the no treatment option. Inputs of CWD that would result through prescription or indirectly by harvest damage, wind throw, and bark beetle kill would improve the quantity and quality of snags and down logs within the stand. All of these resulting structural changes in the treated stands would collectively produce stand conditions that more closely approximate late-seral forest characteristics. The treatment units would also grow and develop structural characteristics at a faster rate than if no treatment were applied. Modeling of current stand conditions in all units for 45 years post-treatment shows that average DBH would be six to eight inches larger (range: 4 - 10 inches), and average snag size would be four to seven inches larger (range: 1 - 10 inches) over the non-treatment stands. Treated stands would also maintain relative densities in the optimal range for a longer time period, and make modest improvements in crown ratio over non-treated stands. A more detailed comparison of treatment/no treatment stand conditions can be found in the Silvicultural Prescription within the Analysis File.

Cable and ground-based yarding systems would likely result in some minor damage (<1%) to the residual trees within the treatment units. Helicopter yarding would have less impact on residual trees than cable and ground-based systems. Prescribed burning of slash piles along roads and near landings, if it occurs, could result in damage to the crowns of residual trees in these areas. To the extent that either yarding systems or prescribed burning results in tree death, such minor impacts to the residual stand would be consistent with inputs of CWD proposed for the treatment units.

Swiss needle cast currently is light in the non-treated area, so the affect is expected to be minimal within the proposed treatment area since other tree species are being favored. Other forest health issues discussed in the Affected Environment section are expected to have minor and site specific impacts in the proposal area. If sustained over time, Swiss needle cast may affect the ability of thinning prescriptions to achieve desired structures and compositions in young stands. Following a thinning, the potential for wind throw is expected to be slighter higher for the first few years. However, it is not expected to be significant and would generally add vertical and horizontal diversity to the stand and contribute CWD to the forest floor. Dwarf mistletoe has a slight increase in risk by creating multi-storied stands, especially in Section 5. Douglas fir beetle also has an increased chance of risk due to increased levels of CWD post-harvest. In addition, a thinned stand has potential to increase the risk of bear damage.

4. Environmental Consequences for Forest Productivity: Alternative B.

Alternative B would have essentially the same effects on forest structure as that described for the proposed action (Alternative A). Fewer acres would be treated in this alternative and a slight increase in residual tree damage may occur since no helicopter yarding would occur. Impacts to residual trees are still expected to be consistent with inputs of CWD proposed for the treatment

units.

5. Environmental Consequences for Forest Productivity: No Action

Under this option, no activity would occur and the growth rates of trees would continue to decline with increasing competition for light. Understory regeneration and ground cover would not likely survive due to the inability of light penetration through the canopy. Natural disturbance would be the agent for creation of stand structural diversity. In a natural stand, this diversity would take considerably longer to develop than if the proposed treatment were implemented. Without intervention at this time, the development of many late-successional forest structural features would occur at a much slower rate because the overstory is becoming increasingly dense and uniform. The crown ratios of the overstory trees would decrease at a faster rate compared to the preferred alternative. In addition, previous pre-commercial thinning of forest stands for timber production purposes have contributed toward stand uniformity in some areas of the proposed density management project. There would be no elevated risk for bark beetle infestation in the immediate short term but the risk of Douglas-fir Swiss needle cast would remain the same as in the preferred alternative. The risk of dwarf mistletoe to western hemlock would remain the same as in the preferred alternative. The risk for bear damage would be lower because the stands would not be thinned.

D. Soils (Issue 2).

1. Soil Issue:

What effects would road construction, timber harvest, logging and site preparation have on long-term soil productivity?

2. Affected Environment for Soils

The predominant soil series on and around these sites are Blachly clay loam and Klickitat gravelly clay loam. The sites vary from generally flat on the ridge tops to very steep slopes up to approx. 80%. There are some rock outcrops and extremely steep slopes in excess of 85% adjacent to unit 11 and elsewhere in section 33. Efforts to exclude operations on slopes over 80% have resulted in all of these areas being posted outside of the units.

The slopes and soils on this proposed project area are generally stable with moderately high productively (site index III). Where slopes exceed approx. 70%, the soils tend to be shallower and surface stability becomes less stable with increasing risk of dry ravel and shallow landslides when the surface is disturbed. Vegetation re-establishes fairly rapidly following disturbance on the less steep sites but re-establishment of vegetation can be prolonged on disturbed slopes in excess of approx. 70%slope.

There are two major management concerns with these soils:

a). The sensitivity to compaction when wet and the subsequent reduction in infiltration rate and site productivity when compacted. On compacted steeper sites (>35%) run off rates on bare soil would be rapid and hazard of erosion moderate. Much of the site has slopes between 40% and 60%. Minimizing compaction of soils and maintaining some vegetation and litter on the surface of the steeper areas should be a high priority.

b). The potential for shallow landslides and dry ravel is increased on the very steep sloped areas (>70%) when more than half of the vegetation and surface litter and debris is removed. Maintenance of vegetation and surface debris should be a high priority, especially on the steeper slopes.

3. Environmental Consequences for Soils: Proposed Action

The amount of area permanently removed from the growing base by landing construction and new road construction would be <1%. Soil impacted by light to moderate compaction from skyline yarding roads would be about 2% of the unit area. The amount of unit area affected by moderate to heavy compaction from ground based yarding would be 1-2%. Several studies have reported reductions in productivity up to 40-50% on severely compacted sites. These severe reductions were also associated with significant loss and displacement of topsoil. If the suggested design measures are followed only light to moderate soil compaction and very little top soil loss should occur. Expected productivity losses would be less than 20-30% for the compacted acres. At the completion of operations, ripping of some roads, would mitigate at least 50% of the negative effects from soil compaction. No soil impacts are expected from helicopter yarding. Decommissioning of several roads would result in partial restoration of the roadbed to a condition suitable for tree growth. Because these roads are mostly over topped by existing trees, light would be limiting and growth of new trees would be retarded.

Commencement of ground based yarding may be significantly delayed if trees are cut too early in the season. Transpiration by growing trees will remove soil moisture rapidly during the spring and early summer months. Once the trees are cut however, they will no longer remove soil moisture through transpiration. Furthermore, the felled timber will function as a mulch, greatly retarding evaporative soil moisture loss. This will increase the likely hood of compacting the soil and thereby delay the start up date for ground based yarding.

4. Environmental Consequences for Soils: Alternative B.

The environmental consequences of this alternative would be the same as for Alternative A with the following differences:

- The amount of area permanently removed from the growing base by landing construction and new road construction would be <2%.
- Soil impacted by light to moderate compaction from skyline yarding roads would

be about 2-3% of the unit area.

- ! The amount of unit area affected by moderate to heavy compaction from ground based yarding would be 2-3%.
- ! Decommissioning of all the additional roads would result in partial restoration of the roadbed to a condition suitable for tree growth.

Either the preferred alternative A or alternative B would not exceed the BLM standard of 10% or less, residual compaction. In the disturbed areas, (excluding roads), revegetation of the site, the normal effects from micro/macro fauna activities as well as the mechanical effects of weathering, wetting, drying, etc. would restore soil structure, bulk density and surface condition back toward pre-harvest levels over a period of several decades. In disturbed areas where surface soils are mechanically ripped this process would be accelerated significantly.

5. Environmental Consequences for Soils: No Action

No action would result in the continuation of current conditions at this site (i.e. vegetation would continue growing and soil processes would not be affected). There would be little or no recovery of soil processes on the existing roads that have been identified for decommissioning.

E. Water/Riparian (Issue 3).

1. Water/Riparian Issue.

What effect would the proposed projects have on water quantity and quality as it affects beneficial uses? How would density management and associated activities affect attainment of the Aquatic Conservation Strategy objectives?

2. Affected Environment for Water/Riparian

Precipitation and geology of the project area**.** The project area is located on the southern slopes of Mary's Peak at elevations up to 2,500 feet. As winter storm systems move across the coast range from the south west they gain elevation over Mary's Peak which results in a concentration of precipitation on the southern slopes. This orographic effect is reflected in a mean 2-year precipitation event of 5 to 5.5 inches in a 24 hour period, one of the highest in the mid coast. This elevation range is also subject to rain on snow events, unusual for the cost range, which have the potential to increase peak flows during winter or spring storms.

The project area is bisected along a northeast trending ridge line between Old Blue Mountain and Mary's Peak and two streams drain the slopes along this ridge: Parker Creek to the west, Yew Creek to the east. The ridge line that bisects upper Parker Creek in section 32 approximates the location of a northeast trending fault: bedrock to the east of this fault has been uplifted and tilted westward

relative to bedrock to the west (Baldwin, 1955). Bedrock is composed primarily of the Siletz River volcanics series: a thick sequence of basalt flows, pillow lavas, flow breccias, and pyroclastic rocks formed in a marine environment. Peaks and ridge lines in the area are generally capped by resistant intrusive rocks; primarily gabbro and diorite (so called "mafic intrusives"). Bedrock to the west of the project area is primarily Tyee Formation: thick bedded sandstone and interbedded siltstone.

Hill slopes in the project area are generally steep, and mantled with thin, landslide and ravel prone soils. This is particularly true of slopes along the ridge that divides the project area: as much as 20% of the landscape here has greater than 80% gradient. Water storage is low and infiltration and run off quick. Channels here are typically ephemeral or intermittent, "stair step" in form and subject to debris torrents which strip them to bedrock. Many of the tributary channels here are buried in heavy loads of gravel and cobble due to raveling hillsides. Channel substrates are typically cobble and gravel on top of basalt bedrock. Low gradient channels form at junctions of headwater intermittent channels where debris and sediment deposits to form flats and beavers build dams to further slow the movement of water and sediment.

Project area streams**.** There are numerous first order tributary channels to Yew and Parker Creeks draining the ridge which forms the backbone of the project area in Section 32,33 and 5. Channel types (Rosgen, 1996) on tributaries in the area range from "Aa+" (extremely steep, landslide prone, headwater channels) to "A" channels (narrow, deeply entrenched mountain streams with gradients from 4-10%). Debris torrents are part of the natural processes in Aa+ channels and provide most of the sediment and large woody debris (LWD) to lower channels in mountain regions.

The Parker Creek main channel is primarily a Rosgen A type (>4% gradient), perennial, and in functional condition. These are primarily step pool channels which transition to cascades at valley constrictions. Large wood has created numerous dams with back water depositional areas and small flood plains behind them. Other than portions of section 32, 36 and the ridge line near Old Blue mountain (Section 5), much of the riparian immediately adjacent to the Parker Creek channel, from the confluence with North Fork Alsea to its headwaters on Mary's Peak, has been unmanaged and represents a natural condition for this landscape. Many of these riparian stands, at the bottom of deep, cool canyons, escaped the fires earlier in the century. They are characterized by a multiple storied canopy of scattered mature Douglas fir, red cedar, hemlock, big leaf maple, red alder and a thick under story of vine maple, salal, ferns and salmon berry. These portions of the riparian/channel system are functioning properly and are excellent "reference" sites for natural headwater aquatic systems. However, the upper reaches of Parker Creek in Section 32 and 5 (in the project area) were harvested in the 1950s and 60s. A large debris torrent which originated on a logging road above Parker Creek scoured the upper reaches of section 32 in the 1964 flood event. Material from this landslide is still stored throughout the channel. In addition, the colluvial Hill slopes along this channel are subject to heavy ravel and surface erosion and this material ultimately ends up in channel at the bottom of the slope.

Like the Parker Creek main channel, Yew Creek is primarily a Rosgen A type (>4% gradient),

perennial, and in functional condition. The A channel type is interspersed with a Rosgen G type (gully, <4% gradient) at several locations where steep Hill slopes narrow the valley to a bedrock gorge. Yew Creek in Section 33 has two sections of low gradient flats approximately a quarter mile in length with large, abandoned beaver dam pools. Most of the riparian immediately adjacent to Yew Creek, from the confluence with Crooked Creek to its headwaters on Mary's Peak, has been managed and represents a disturbed condition for this landscape. These riparian stands are characterized by a single storied canopy of deciduous trees, mostly red alder and willow, and scattered Douglas fir plantation trees. Canopy openings are numerous and help support a thick under story of vine maple, salal, ferns and salmon berry. The channel has large deposits of small cobble-gravel with intermixed sand and silts backed up behind numerous debris jams. Much of this material appears to have been deposited in the 1950's and by the 1964 flood event following severe disturbance of the hill slopes during harvesting operations of the late 50s and early 60s. The hill-slopes below Old Blue mountain (sec 4 and 33) in particular are prone to severe raveling and surface erosion. Much of this material has filled the small tributary channels draining the ridge line and is periodically scoured and moved downstream during large storms. This material was scoured and redistributed in the 1996 flood, but compared to 1964, little additional material appears to have entered the system.

Project area roads. The vast majority of sediment delivery to streams from roads occurred during the 1950's (when the roads were constructed) and in the 1964 flood event, with a smaller contribution in the 1996 storm. The road surfaces and fills have, with some exceptions, stabilized in the intervening decades and older tractor logging roads have revegetated. Trees have fallen across many of the roads in the area which has blocked vehicle access. Most of the secondary roads likely have very little influence over hill slope hydrology and erosional processes at this time. However, a survey of Road 13-7-4, the Yew Creek mainline, showed that approximately 1.5 mile of the 4.4 mile long road (34%) drains directly to stream crossing culverts. This represents a significant opportunity for road surface fines to enter the stream system during storm events, especially in combination with heavy vehicular use during winter months.

Project area water quality and beneficial uses. No water quality data was located for streams in the project area so water quality conditions are based on observation and inference. Heavy hill slope disturbance following the Old Blue fire and salvage operations, followed by flood initiated debris torrents and landslides, have increased sediment levels in the main channels and tributaries of the project area. Chronic contributions of fine sediments from road surfaces may be occurring. Without further investigation, it is not possible to say if road surface fines are a significant or insignificant feature. Stream temperatures have not been measured. However, current stream side vegetation on the BLM in this area is generally adequate to shade surface waters during summer base flow and stream temperature trends are probably toward general cooling as riparian vegetation matures. Since large numbers of cutthroat trout were observed throughout perennial streams in the project area, it is reasonable to conclude that water quality conditions are currently adequate for the maintenance of a healthy aquatic system.

Oregon Department of Environmental Quality's 1998 303d List of Water Quality Limited Streams is a compilation of streams which do not meet the state's water quality standards. Parker and Yew Creek are not listed in the report. However, the North Fork Alsea is listed as not meeting water quality standards for summer temperatures, from the mouth to headwaters. Stream temperature data from BLM confirmed this assessment during the summer of 1998, at least as far upstream as section 19 (T.13 S. , R. 8 W.) on the NF Alsea main-stem. However, the U.S.F.S. Siuslaw has indicated that stream temperatures in Parker Creek, at its confluence with the NF Alsea main-stem, remain below the state temperature threshold throughout the summer (Jack Sleeper, Siuslaw Fisheries Biologist, personal communication). No stream temperature data has been located for Yew Creek.

The Oregon Department of Environmental Quality (ODEQ) has published an assessment dealing with non-point water pollution in Oregon streams titled; *1988 Oregon Statewide Assessment of Non-point Sources of Water Pollution.* The publication lists the Alsea River, from its mouth to headwaters, as having sedimentation problems. However, this assessment was based on observation and there is no supporting data or additional information at this time.

There are no known municipal or domestic water users in the project area however, downstream withdrawals of surface water for irrigation and livestock watering occur in the NF Alsea valley north of the town of Alsea. In addition, water is withdrawn to supply the NF Alsea fish hatchery in section 20 (T.13 S. , R. 8 W.). Additional beneficial uses of the NF Alsea stream-flow include both resident and anadromous fish, recreation, and esthetic values.

Riparian Reserves. Approximately 185 acres (52.8%) of the proposed treatment units are classified as Riparian Reserves. The Riparian Reserve land-use allocation is a basic component of the Aquatic Conservation Strategy (ACS), as described in the *NFP* and Salem District *RMP*. This special land-use allocation is intended to help maintain hydrologic, geomorphic, and ecological processes that directly affect streams, stream processes, and aquatic habitats. They are also designed to provide travel corridors and resources for both riparian dependant and late-successional associated plants and animals. The *NFAWA* recommends vegetation manipulation, including density management, within appropriate reaches of streams for the recruitment of future large woody debris (pages 125,137). In addition, the *LSRA* recognizes the need for density treatments to meet long-term objectives for forest stand structure and composition both outside and inside Riparian Reserves (page 40). Actual riparian zone habitat along streams has been excluded from proposed treatment units, and only the up slope portions of the Riparian Reserves have been proposed for density management. The prominence of riparian zone habitats is most often directly related to stream size. The smaller tributaries and intermittent streams of the project area show relatively little or no development of unique riparian zone forest stand conditions. The current stand conditions within the Riparian Reserve portion of the treatment units are essentially the same as that lying outside of Riparian Reserves (see Affected environment for Forest Productivity, or refer to Silvicultural Prescription in Analysis File).

3. Environmental Consequences for Water/Riparian: Proposed Action

Direct and Indirect Effects. Measurable effects to stream flow, channel conditions, and water quality due to the proposed action are unlikely. In the short term, this action is unlikely to alter the current condition of the aquatic system either by affecting it's physical integrity, water quality, sediment regime or in-stream flows. Some short term, variable increases in stream turbidity may result (discussed below). Alterations in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect would be difficult to measure and unlikely to substantially alter stream flow or water quality. Any changes in the capture and routing of precipitation would likely return to pre-treatment conditions as the remaining forest fills out. Increases in mass wasting and alterations in sediment regime as a result of this action are of low probability.

For the protection of stream channels and aquatic resources, stream protection area buffers or "no treatment zones" were applied to all stream channels in the project area. These zones were determined in the field by BLM specialists following a protocol developed by the area hydrologist, biologists and riparian ecologist. The protocol required a minimum twenty-five foot no treatment zone. This zone could be extended up slope, during field surveys, as far as deemed necessary to protect aquatic resources. Additionally, no treatments in riparian areas were proposed unless stand densities and composition clearly indicate the need.

Since most of the stream channels in the project area do not flow in the summer, increases in stream temperature as a result of this action are unlikely. The main channel on Yew Creek is already fairly open to direct heating by the sun and buffers were applied to ensure that this proposal would not substantially alter stream side shading. Shading along Parker Creek is currently adequate and this proposal would also not substantially alter stream side shading here.

Road construction effects would be limited by restricting work to periods of low rainfall and runoff. New road construction is limited to locations on or very near the ridge line which would eliminate interception/disruption of subsurface water flow. Construction would employ techniques to reduce concentration of runoff and sedimentation to a minimum and, since no additional stream crossings would be constructed, there would be little opportunity for sediment from these surfaces to enter streams. In addition, 2.1 miles of roads would be decommissioned under this proposal leading to a net decrease in road mileage in these sub-watersheds.

The main haul route would be along the 13-7-4 road, the Yew Creek road, which enters the Mary's Peak Road in section 4, T.13 S., R. 7 W.. The Yew Creek road has a rocked surface and as indicated earlier, has a significant potential for increasing turbidity in Yew Creek. Timber hauling during periods when water is flowing on roads and into ditches could substantially increase stream turbidity if flows from ditches are large enough to enter streams. To assess the potential surface erosion contributions from this haul route, annual surface erosion and delivery to streams from the 13-7-4 road surface were calculated using the surface erosion module of Washington State

(Washington Forest Practice Board, 1992).

Calculated values ranged from a low of 0.15 m^3/ha/yr to 1.7 m^3/ha/yr for the 640 acre section the road traverses. For comparison, this would be equivalent to the average surface erosion rate expected during the first decade if the entire section were clear cut (the low estimate) to the expected surface erosion rate if the entire section were clear cut and burned (the high estimate) (Swanson and Grant, 1982). The high range in the sediment yield predicted by this model is primarily due to the heavy influence of the road use parameter. Road use is currently quite low except during hunting seasons. However, under this proposal, approximately 1,500 truckloads of logs would pass over this road. This would likely push the surface erosion rate towards the high estimate. Measures which should be taken to mitigate against these effects are described later in this report.

Yarding corridors, if sufficiently compacted, may route surface water and sediment into streams; riparian reserves function as areas for sediment to settle out before reaching streams. During yarding, residual slash on the compacted areas would contribute to reducing the accumulation of runoff by deflecting and redistributing overland flow laterally to areas where it may infiltrate the soil. During periods of high rainfall, runoff from these surfaces should be observed to determine if it is significantly impacting stream turbidity. If a problem develops, corrective measures would be implemented during contract administration.

Tree removal would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action.

This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy. Over the long term this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in the Riparian Reserves (refer to Environmental Consequences for Forest Productivity).

Cumulative Effects - Water Resources. Since this proposal would effect a significant proportion of the forest canopy in the Parker and Yew Creek sub-watersheds and because much of this area is at altitudes where rain on snow potential is high, a thorough cumulative effects analysis (CEA) was completed utilizing protocols suggested by the Salem District of the BLM (USDI-BLM, 1994). The results of this analysis are summarized below. The full CE analysis as well as the assumptions and methods utilized for this analysis are documented in the hydrology field report for this project.

Table 1 is a summary of the potential cumulative effects (CE) to watershed and aquatic resources that are expected under this proposal in combination with past actions and likely future actions on private lands in the Parker and Yew Creek sub-watersheds. As indicated in Table 5, the 2010 scenario assumes implementation of this proposal together with the harvest of all 40-yr age class

stands on private lands during the next ten years. The current CE scores in both Parker and Yew Creeks indicate a moderate level of effects as forest cover has recovered from harvest in the 50's and 60's. The trend is toward recovery to a fully mature canopy and a reduction of total CE levels under the proposal analyzed in this document. However, harvest on private lands in both sub-watersheds is likely to significantly increase CE levels (areas of high CE are confined primarily to private sections while surrounding federal lands are mostly in the low to moderate range).

Other likely CE in these sub-watersheds include a significant increase in sediment supply (primarily due to construction and use of roads and ravel off steep hill-slopes), a decrease in LWD recruitment potential (exclusively on private lands), increases in peak flows (see the WAR analysis), and a short term reduction in water quality (primarily a result of increases in the supply of fine sediment). However, these effects are almost exclusively a result of harvest activities on private lands that are expected to occur during the next decade (in fact, several large harvest operations on private lands in the watershed occurred in the summer of 1998). In conclusion, implementation of this proposal would have very little influence over watershed CE which would be primarily driven by activities on private lands and inactivity on most public lands during the next ten years. To the extent that this proposal would influence overall watershed condition, it is likely to lead to short term increases in stream turbidity over haul routes and long term increases in LWD recruitment potential to streams. Since long term LWD supply to streams is likely the most critical factor for maintenance of aquatic habitat in these sub-watersheds, this proposal is expected to maintain or improve aquatic habitat in these sub-watersheds.

Table 5. Yew Creek and Parker Creek: Current condition and Cumulative Effects trends for watershed and aquatic resources.

ATTRIBUTE	**Parker: Current Condition**	**Yew: Current Condition**	**Parker: Public with LSR project**	**Parker: private 2010-*scenario***	**Yew: Public with LSR project**	**Yew: private 2010-*scenario***
CEA[1]	5.4	6.2	3.7	8.4	4.5	7.1
WAR[2]	9% - 13%	14% - 19%	10%- 11%	15% - 19%	16% - 21%	22% - 29%
Sediment supply[3]	High	High	No change	Significant increase	Small short term increase	Significant increase
Riparian shading/ stream temp[4]	Good, trend is stable	Fair, trend is improving	No change	No change	No change	No change
Riparian LWD recruit potential[4]	Good	Fair	Increase	Decrease	Increase	Decrease
Road Density	3.9 m/sq-m	4.8 m/sq-m	Decrease	Increase	Decrease	Increase
Channel condition	Good (mostly unimpacted)	Fair (aggraded, fine sediments, high w/d)	No change	No change	No change	No change
Aquatic Habitat	Fair (mod - high pool and LWD, cover)	Fair (high LWD & pool complexity)	Maintain or increase pool quality and depth	Slight reduction in pool depth/quality	Maintain or increase pool quality and depth	Slight reduction in pool depth/quality
Water Quality	Good	Good	Maintain	Increase sedimentation	Increase turbidity	Increase sedimentation

5-yr [scenario]: assumes harvest of all 40-yr age-class and older stands on private held lands (age classification from on 1988 satellite data, see North Fork Alsea WSA)

CEA[1] & WAR[2] : preliminary analysis based on Washington State DNR watershed assessment methods, from hydrologic conditions module. CEA (cumulative effects analysis) is an average score for the watershed (sixth field). A score of 1 is equivalent to a fully mature canopy in a rain dominated system, 12 is equivalent to a clearcut in a rain-on-snow dominated system. WAR (water available for runoff) estimates the percentage increase in WAR during a large rain-on-snow event (i.e., 1996 event) relative to a fully mature canopy.

Sediment supply[3]: From NF Alsea WSA, aerial photo review, and field review. Includes mass wasting, fine sediments from roads and surface ravel erosion (likely the largest source in these watersheds).
Riparian shading/stream temperature[4]: From NF Alsea WSA, field data (BLM and ODFW).

4. Environmental Consequences for Water/Riparian: Alternative B.

Direct and Indirect Effects. This alternative differs from the proposed alternative in that it would utilize ground based and cable logging techniques over a larger portion of the treatment area.

Reduced logging costs would be the tradeoff against increased levels of disturbance to hill slopes and aquatic resources. Disturbances include 3,800 feet of new and reconstructed roads (including reconstruction across a stream channel), 21 acres of ground based yarding (including two temporary stream channel crossings), 304 acres of cable yarding. This alternative would also eliminate the need for clearing approximately .7 acre, currently young plantation stock, to be utilized for helicopter landings.

New road construction (and reconstruction of existing road surfaces) under this alternative would involve relatively small additional risks and disturbance since construction would be on stable ground which requires little excavation or fill. Road surfaces would be minimized and following treatment, the road would be ripped and blocked. A portion of the reconstruction crosses a tributary stream channel on a hill slope with poor stability. The instability is characterized by deep seated, slow moving, rotational slumping of the surface, likely in response to high water tables and year round wet conditions. The road surface would be unlikely to influence the landsliding process unless it captured and routed additional water to the area.

Ground based yarding would occur in areas of <30% gradient outside of flood plains and would be limited to periods of low soil moisture. However, ground based equipment always presents some increased risk for compaction and soil disturbance relative to cable or helicopter methods. In addition, access to the area to be treated is blocked by two headwater, intermittent streams. Both of these channels would have to be crossed repeatedly with the equipment and inevitably some damage to the channel and its banks would occur. This would likely be short term and recovery to pre-disturbance conditions would take place within a year or two.

Cable yarding under this alternative would result in small levels of increased soil disturbance, primarily along yarding corridors, relative to helicopter yarding. Cable yarding methods inevitably present some level of increased risk for soil compaction and reductions in water quality, however small, relative to helicopter yarding. However, since the material being yarded is relatively small and light weight, this disturbance would be short term and unlikely to result in measurable effects to water quality or aquatic resources.

Cumulative Effects - Water Resources. The scale of the additional disturbances under this alternative would be too small to be quantified in a watershed level CE analysis. There is no meaningful difference between this alternative and the preferred alternative relative to cumulative effects.

5. Environmental Consequences for Water/Riparian: No Action

No action would result in the continuation of current conditions and trends at this site.

F. Botany/Fish/Wildlife (Issue 4).

1. Botany/Fish/Wildlife Issues:

What effect would the proposed project and associated activity have on habitat and the species dependent upon it? Specific concerns for each resource include:

a). BOTANY: What effect would the proposed action have on native plant species? Would the proposed action have any impacts on Special Status Plant Species or SEIS Special Attention Plant Species? Would the proposed action lead to a significant increase in noxious weed species? Would the occurrence of noxious weed species have adverse effects on existing plant communities within the project area?

b). FISH: What effect would the proposed project have on aquatic habitats and species, including resident and anadromous fish?

c). WILDLIFE: How would the proposed action affect terrestrial wildlife habitats within the project area and across the watershed ? How would the proposed action affect wildlife species which BLM, by law and policy, is required to protect, maintain, or recover?

2. Affected Environment for Botany/Fish/Wildlife

Botany. The major plant association group present within the project area, as listed in the Salem District *PRMP/FEIS* (Volume1, chapter 3, pages 29-32), is the Douglas-fir/Red Alder/Salmonberry group. This group occurs east of the Sitka Spruce plant grouping and extends west to the crest of the Oregon Coastal Mountains. More specifically the project area is comprised of several plant associations all of which belong to the western hemlock plant association (refer to Botany Report within Analysis File).

The majority of this sale is dominated by a Douglas-fir canopy layer with the exception of Unit 13. This unit has a mixed canopy of western hemlock and Douglas-fir. However, mixed canopies of Douglas-fir, western hemlock, and lesser amounts of western red cedar occur throughout the project area. Red alders and big leaf maples occur along and adjacent to most of the larger tributaries within the project area. The majority of the red alder dominated areas are located outside of the project area and within the Riparian Reserves. There are relatively few big leaf maples or true firs (noble and/or grand fir) within the proposed treatment units.

The understory varies from thickets of vine maple (common on southern aspects), to scattered to few or no understory in areas with complete canopy closures. The understory, as well as the ground cover, has died in areas due to low light levels from the heavy canopy cover. Some areas are

dominated by shade tolerant conifer reproduction. Salmonberry and Devil's club are common in the area but are mostly located outside of the project area in the riparian areas. The ground cover is mostly dominated by salal, sword-fern, Oregon grape and open slash covered areas. The open slash areas mostly occur in areas that have a canopy layer of 80% and greater and on north and west slopes. These areas are mostly dominated by Oregon beaked moss (*Eurhynchium oreganum*).

Special Status and Special Attention Plant Species. There are no known sites for Special Status plants, nor were any new sites found within the project area. The following Special Attention Species were found in and adjacent to the proposed project areas:

[Lichens: Survey and Manage, Category 4]
Nephroma resupinatum, Pseudocyphellaria anthraspis, Pseudocyphellaria crocata, Sticta fulginosa and *Lobaria oregana*.
[Fungi: Protection buffer species]
Sarcosoma mexicana and *Otidea onotica*.
[Fungi: Survey and Manage, Categories 1 and 3]
Phaeocollybia sipei, Phaeocollybia *piceae*, *Ramaria ariospora, Cantharellus formosus, Sarcosoma latahense (=Plectania latahense)* and *Helvella compressa*.
[Fungi: Survey and Manage, Category 3]
Phaeocollybia fallax, Hydnum umbilicatum and *Plectania melostoma,*
[Fungi: Survey and Manage, Category 3 and 4]
Gyromitra esculenta, Omphalina ericetorum.

There are no known sites of bryophytes or vascular plants within the project area. Nor were any of these species found during surveys.

The following Category III Noxious Weeds were located in or adjacent to the project area: Scotch broom (*Cytisus scoparius),* St. John's wort (*Hypericum perforatum),* Tansy ragwort *(Senecio jacobaea),* bull thistle *(Cirisium vulgare)* and Canadian thistles *(Cirisium arvense)*.

Fish. Habitat inventory information was obtained from Oregon Department of Fish and Wildlife (ODFW). Surveys were conducted in 1993 and 1997 on portions of Parker, Yew, and Alder Creek. The upper reaches of Parker and Yew Creeks exhibited confined channels on moderate gradients. Dominant habitat types on these creeks included step falls, pools, and riffles. The upper reaches of Alder Creek have higher gradients that have been scoured by road and hill slope failures near the project area. As a result, Alder Creek is dominated by cascades, riffles and bedrock steps. A more detailed presentation of fish habitat conditions is contained in the Fish Biologist Report (see Analysis File).

BLM Surveys for fish presence in the Spring of 1999 confirmed presence of resident cutthroat trout in most of the larger tributaries of all three Creeks. ODFW data indicates that anadromous fish in Parker Creek (primarily steelhead) cannot access the upper reaches of this creek due to a series of

falls that block upstream passage (about 1 mile west of Unit 10). On Yew Creek anadromous fish use ends approximately one mile downstream of the project area. Anadromous fish cannot access Alder Creek due to the culvert on Hwy 34, approximately ½ mile below the project area, where it flows into Crooked Creek.

A summary of forest habitat conditions presented in the *NFAWA* shows that 22,859 acres (54.5%) of the watershed is composed of early to mid-seral habitats. Locally, the 335 acres of proposed treatment units lies collectively within about 800 acres of contiguous early to mid-seral habitat which was evaluated for treatment. A wide variety of other habitats lay adjacent to the proposed treatment units, including: small old-growth patches, larger late-seral forest patches, hardwood riparian strips, shrub/sapling stands, and rocky outcrops. The federal lands in and adjacent to the project area have been allocated as Late-Successional Reserve (LSR), and have also been designated as Critical Habitat for both the northern spotted owl and marbled murrelet.

The *NFAWA* found that the structural components of forest stands that were of most concern within this watershed were: large hard snags, coarse woody debris (CWD), development of sub-canopy layers, and tree species diversity. These structural components are generally not well represented in the young stands that are the target of this project. The treatment units are composed primarily of moderate to high density Douglas-fir dominated stands with some localized pockets of species diversity. The legacy of previous harvests in these areas has resulted in moderate accumulations of large down logs in advanced stages of decay, with few large snags (dbh > 20 inches). A few of the treatment units do have some live old-growth trees remaining. Root rot pockets have recently begun to show up, widely distributed across some of these stands and stem exclusion processes are contributing modest amounts of small diameter snags and down logs. The proposed treatment units do not contain any significant special habitat features. However, some special habitats (e.g. wetlands, seeps, rocky outcrops, etc.) do exist adjacent to the proposed units.

A great variety of wildlife species may use these early to mid-seral forest habitats. Most of these species can utilize a broader range of habitat conditions than those species associated with old-growth or early-seral habitats. The *NFAWA* found that the primary concern for wildlife species within this watershed was the greatly reduced and fragmented condition of the remaining old-growth habitat, only 1,796 acres (4.3% of watershed). Whereas, the early and mid-seral habitats are quite abundant, making up more than half of the current forest habitat (54.5%) of the watershed. Over half of the treatment units fall within Riparian Reserves (52.8%) boundaries. However, the habitat conditions of the uplands (outside of Riparian Reserve) are essentially identical to habitat conditions within the Riparian Reserve Boundaries for these treatment units. Actual riparian zone habitat was excluded from treatment boundaries.

A review of all pertinent Special Status Wildlife Species possibly affected by the proposed action is presented in the Biological Evaluation (see Analysis File). Many of these species are found in different habitat types or are wide spread generalists and are unlikely to be affected by this action. The current status and condition of several of these species was described within the watershed

analysis. Only the following species groups are discussed concerning their affected environment and environmental consequences related to this proposed action:

- Federally listed wildlife species (species covered by Endangered Species Act);
- Survey and Manage wildlife species (mollusks, red-tree voles);
- Riparian Reserve species (amphibians, bats, mollusks, animals mentioned above);
- pertinent bird species (forest raptors, neotropical birds, woodpeckers);
- pertinent mammals (Pacific fisher, big game animals)

The only federally listed wildlife species that are likely to occur in the project area are the northern spotted owl and marbled murrelet. In the early 1990's both of these species were listed as Threatened under the Endangered Species Act (ESA), due primarily to the loss of late-seral habitat occurring regionally within their range. No spotted owl or marbled murrelet surveys were required for this project evaluation. However, information gathered from surveys associated with a demographic study of spotted owls indicates that this species has been detected in mid-seral forest stands within 0.5 miles of Unit 12. The nearest known spotted owl site lies in a late-seral habitat patch 0.8 miles southwest from Unit 13. The mid-seral stands of the project area are likely to provide dispersal habitat that may be used by spotted owls as they move across the landscape between older more suitable forest stands. The nearest occupied marbled murrelet site is 0.5 miles southwest of Unit 13. Murrelets have also been detected 0.5 miles northwest of unit 5. Suitable nesting habitat for owls and murrelets is lacking within the proposed treatment units. A few remnant old growth trees do exist in some units, but these trees either lack nesting structure or stand well above the surrounding forest canopy and are not considered suitable habitat for either species. However, suitable habitat for both species is present within 0.25 miles of Units 3,4,5,6,8,10,12,13. The entire project area lies on federal lands which have been designated as Critical Habitat for both species.

The Survey and Manage (S&M) wildlife species likely to occur within the project area include eight mollusk species (snails and slugs) and the red-tree vole. Over 400 acres within the project area were surveyed for S&M mollusk species (per IM OR-98-097: *Survey and Manage Survey Protocols - Mollusks*). Four slug species were found. The early to mid-seral stands had twenty-five sites collectively for these slugs. One papillose tail-dropper site was found in an adjacent old-growth patch. The blue-grey tail-dropper (13 sites) and papillose tail-dropper (9 sites) were the most abundant in the early to mid-seral stands, while Malone's jumping slug (2 sites) and warty jumping slug (1 site) were relatively rare. Most of the sites where these slugs were found had the following characteristics in common:

- simple forest structure indicative of early to mid-seral forest habitat (high stem density, few standing snags);
- moderate to high canopy closure (> 60%);
- a legacy of large down logs in an advanced state of decay;
- prominent hardwood shrub understory (vine maple, pin cherry); and

- variable ground cover (duff, moss, sword-fern, Oregon grape).

These relatively young seral stands where the slugs were found have all experienced wildfire and salvage or clearcut logging in the past 35 to 55 years. A review of aerial photographs from 1950 and 1970 revealed that the logged areas had a high density of skid roads and cable corridors with prominent patches of exposed soils and large amounts of big cull logs. The mollusks found on our recent surveys of these previously logged sites, most likely represent populations that survived the past disturbance by utilizing the refugia provided by the accumulations of large down logs in the less disturbed clear-cut areas. The only treatment units without mollusks detected were Units 6, 7, 9, and 12.

Red-tree voles are likely to occupy the adjacent older forest patches and may make limited use of the mid-seral stands within the treatment area. No surveys for this species are required since 72 percent of the forest stands within the Upper Alsea Watershed (5^{th} Field HUC# 1710020501) may provide suitable habitat for this species (per IM-OR-97-009: *Interim Guidance for Survey and Manage Component 2 Species: Red Tree Vole*). However, a few stick nests were found in and adjacent to Unit 4 which may indicate use by red-tree voles and/or other small mammals. All trees with stick nests found in units up in the green portion of the canopy have been marked to reserve from harvest.

Riparian Reserve Species are those wildlife species identified in the NFP, that are intended to benefit from the habitat conditions and connectivity afforded by forest stands inside the Riparian Reserve land-use allocation. These species include all amphibians, red-tree voles, American marten, all bats, northern spotted owls, and marbled murrelets. The affected environment for red-tree voles, spotted owls, and murrelets has been discussed above. Several amphibians including both terrestrial and aquatic species are known to occur within the watershed and likely occur within the project area. Incidental observations have detected rough-skinned newts, red-backed salamanders, Dunn's salamanders, and clouded salamanders in or adjacent to the treatment units. The terrestrial amphibians require adequate forest cover, CWD, and dispersal corridors connecting to similar or better quality habitats. The American marten is a carnivore in the weasel family that is very rare in the Oregon Coastal Ranges. It is believed to prefer large patches of late-seral and old-growth forest where it preys mainly on smaller mammals and utilizes large CWD for dens. The older forest adjacent to the treatment units may provide suitable habitat for this species. However, there are no known sites for this species within this watershed. Several bat species are known or likely to occur in the watershed. Some of these species require caves or man-made structures (mines, bridges, buildings) for roost sites and maternal colonies. Some species roost in the forest on foliage, under bark, or in cavities created in large snags or down logs. Riparian zone habitat with adjacent late-seral forest patches may be particularly important to these bats, since insect swarms associated with a nearby water source can provide an abundant high quality food source in close proximity to roosting sites and maternal colonies. Populations of all of these riparian reserve species are suspected to be very localized or declining across the region due to loss of riparian zone habitats, fragmentation of late-seral forests, and loss of high quality CWD.

Pertinent bird species likely to occur within the project area include forest raptors, neotropical migratory birds, and several woodpecker species. No surveys are required for these species. The forest raptors such as the goshawk, Cooper's hawk, and sharp-shinned hawk are known to utilize forest stands similar in age and structure to the treatment units. These species may nest in these stands and forage for birds and small mammals within the forest or adjacent open habitats. Changes in forest structure by harvesting or through natural succession can cause these species to abandon historic nest sites. No known nest sites for these species are known of within or adjacent to the treatment units; nor were any nests found during project planning visits to the area. Several species of neotropical migratory songbirds are known to occur and likely nest in the vicinity of the treatment units. Some of these species are believed to be declining regionally due to loss of habitat on their breeding grounds and wintering grounds (Central and South America). Most of these species are insectivorous and make use of a variety of forest habitats. Hardwood stands may be especially important to some species for nest sites and foraging habitat. Several woodpecker species have been observed within and adjacent to the treatment units. These species which excavate cavities in snags and down logs, may be limited by the distribution and quality of coarse woody material across the landscape.

Pertinent mammals of concern include the Pacific fisher, and big game species such as deer, elk, cougar, and bear. The fisher, is extremely rare in the Oregon Coastal Ranges, and like the American marten, it is believed to prefer large patches of late-seral and old-growth forest where it preys on small mammals and utilizes large CWD for dens. The older forest adjacent to the treatment units may provide suitable habitat for this species. However, there are no known sites for this species within this watershed. Deer and elk use of the project area has been observed during project planning visits to the area. Deer use of all the treatment units appears to be moderate, while very little elk use was noted at all (just in two units). Cougars may be resident or transient through the project area, as they hunt for deer and elk. Black bears use of the treatment units appears low in most units, but moderate in Unit 10 where dens were noted in two separate years and several trees show scars from previous bear damage. Within this unit bears appear to utilize the large clusters of down logs as den sites and, upon emerging in the Spring, cause some damage to younger Douglas-fir trees as they tear into the bark to feed on the cambium layer.

3. Environmental Consequences for Botany/Fish/Wildlife: Proposed Action

Direct and Indirect Impacts.

Harvest of trees from the proposed treatment units would allow for an increase in sunlight below the canopy, resulting in the development of a layered understory and thicker ground cover. The composition of existing plant associations within the treatment units would remain essentially the same as no-treatment. This density management is anticipated to create a more heterogenous stand out of the current homogenous stand conditions which would enhance the diversity of native plant species. Removal of the felled trees would result in loss of some of the future nutrients available for the site. However, the tops, limbs and branches, and inputs of CWD would add some nutrients to

the area that would not have been available for several years.

New road construction and landing construction would disturb soils and remove any existing vegetation from the construction sites. Road renovation areas would disturb previously impacted logging access roads. The majority of the roads to be renovated are non-vegetated and have a rocked surface. However, the vegetated roads to be renovated would have approximately the same impacts on vegetation as the new roads to be constructed. The units designated for helicopter yarding would minimize ground disturbance as compared to cable yarding the same areas (as proposed in Alternative B). Cable yarding units would minimize ground disturbance as compared to the ground based yarding systems. In addition helicopter logging would allow for less road to be constructed to facilitate harvest.

There are currently no known sites of Special Status Plant Species within the proposed project area. This thinning project may enhance the area for special status species through creating openings and providing additional light to the ground.

Survey and Manage species such as *Otidea onotica, Phaeocollybia sipei, Phaeocollybia piceae, Ramaria ariospora, Sarcosoma latahense (=Plectania latahense)* and *Helvella compressa* sites would be protected as fungi special interest areas. These areas would be reserved from harvest and the microclimate maintained. *Otidea onotica and Helvella compressa* sites were also found within the riparian reserves outside of the project area. *Cantharellus formosus*, a S&M Category 1 species, would not receive any special protection. DNA analysis has indicated this is the common chanterelle of western Oregon and not *C. cibarius* as once thought. This species is common and harvested commercially throughout western Oregon and western Washington. Management Recommendations for Survey and Manage Fungi (Sept. 1997) states, "It is a candidate for removal from the list of taxa of special concern because it is commonly found in disturbed, second growth habitat across its range."

Sarcosoma mexicana, a protection buffer species, has been found within the project area as well as within the riparian reserves outside of the project area. Several sites of this species, located within the project area have been reserved as "fungi special interest areas". Additional sites have been withdrawn from the proposed unit boundaries. Several other sites located in unit 13 (Section 5) would not be protected by reserve areas. However, the proposed harvest methods in these known sites in unit 13 would minimize ground disturbance (helicopter). It is not known whether or not this species is mycorrhizal. It is known to be saprophytic on rotten limbs and wood, often buried. This proposed treatment is intended to accelerate development of older forest conditions. *Sarcosoma mexicana*, which was added on the Protection Buffer species list to indicate older forest conditions, is found here in 40 to 50 year old stands. Density management would result in large amounts of tops, limbs and branches creating suitable habitat for this species in the future. With the known sites for this species lying within Riparian Reserves, withdrawn areas, and fungi special interest areas (reserve islands), this species should persist after the proposed action. The Marys Peak Resource area has 14 known sites of *S. mexicana* outside of this project area, and many of these sites are in younger

aged stands. This species is a candidate for removal from the S&M species list for western Oregon, due to its apparent prominence in these younger aged stands.

Omphalina ericetorum is common on rotting logs and should be protected by restricting harvest on down woody materials. It is also common in young stands with down woody material.

The other fungi survey and manage category 3 species (*Phaeocollybia fallax, Hydnum umbilicatum* and *Plectania melostoma*) are fairly common throughout western Oregon and since this proposed action would have relatively modest impacts on total forest habitat conditions these species are expected to persist in the project area after harvest.

The lichen species, *Nephroma resupinatum, Pseudocyphellaria anthraspis, Pseudocyphellaria crocata, Sticta fulginosa* and *Lobaria oregana* would not receive any special management or protection. Lichen habitat should increase with implementation of the project by providing additional sunlight to the understory.

All areas of disturbed soil have the chance for establishment of noxious weeds. Often non-native species would become established on exposed mineral soil but would diminish within four to five years of disturbance, being replaced by native species. However, the common noxious weeds (see those listed below) often persist along roadways. Grass seeding exposed soil areas tends to decrease the establishment of non-native and/or noxious weeds. The following species found in the project area are classified as Priority III noxious weeds and are well established and widespread throughout the Mary's Peak Resource Area and the Salem District: Scotch broom, St. John's wort, Tansy ragwort, bull thistle, and Canadian thistle. Eradication of these species is deemed not to be practical using any proposed treatment methods. Any adverse effects from noxious weeds are not anticipated. The risk rating for the long-term establishment of noxious weed species and consequences of adverse effects on this project area is low.

This proposed action would have a short term negative affect on sediment delivery to the streams within the project area as noted above (see Water/Riparian discussion). The proposed design features are anticipated to keep sediment delivery to a minimal level and should not significantly affect the current quality of aquatic habitats. Most of the road decommissioning affects would come from Rd. 12-7-32.1 (Parker Creek), which would remove approximately 12 culverts and restore stream channels. Any increase in sediment delivery from this road would be short-term, but may affect the tributaries and downstream reaches of Parker Creek. Other road decommissioning affects would most likely be minor due to road location (ridge top).

Thinning of stands within Riparian Reserves on the west and south side of prominent tributaries would not substantially affect shading of the streams or the current stream temperature regime. Thinning in Riparian Reserves would not have direct adverse effects on resident fish and other aquatic species. Such young age-class forest stands in riparian areas do not provide good quality (larger diameter and length) large woody debris (LWD) for streams. Enhanced forest stand

conditions should provide higher recruitment levels of LWD in the future.

As noted above, the collective actions (density management, CWD creation, and road work) proposed on about 335 acres would change the existing forest structure and alter the development of future forest stand conditions. Such changes are expected to enhance wildlife habitat conditions both spatially and temporally. This proposed action represents about 1.5 percent of the total early to mid-seral forest stands within the North Fork Alsea River watershed. Locally, this 335 acres of proposed treatment units lies within 800 acres of contiguous early to mid-seral stands which were evaluated for treatment within the project area. The direct and indirect changes anticipated to occur to forest habitat characteristics from this proposed action are:

[short-term (1-5 years)]

- light to moderate reduction of canopy closure (resulting canopy >40%) on 39 percent (315 acres) of the contiguous 800 acres of early to mid-seral conifer forests in the project area;
- creation of openings and patches of low stand density (less than 1 acre in size) resulting in high reduction of canopy closure (resulting canopy 0-40%) on 4% (35 acres) of the contiguous 800 acres of forest stands in this age-class;
- minor disturbance to existing CWD material (snags and down logs) resulting from felling yarding and road construction;
- creation of hard CWD of optimal size and quality for available stand conditions;
- retention and enhancement of hardwood tree and shrub diversity;

[long-term (5-20 years)]

- transition in structural development of stands to more rapidly achieve late-successional forest habitat characteristics (large diameter trees, sub-canopy development, greater species diversity, greater volume and size of hard CWD);
- extended persistence of hardwood tree and shrub cover diversity;
- lower density of open roads to provide higher quality habitat patches with reduced human disturbance.

No effects are anticipated to occur to the following habitat components: riparian zone habitats, existing remnant old-growth trees, special habitat characteristics.

Suitable habitat for the federally listed wildlife species (spotted owls and marbled murrelets) would not be affected by this action. Nor would any of the constituent elements of Critical Habitat for these species be affected by this action. The overall quality of the treatment units as dispersal habitat for spotted owls would not be affected since the average stand density of the entire treatment area would remain above 40 percent. But the noise created by power equipment that would be used to facilitate this proposed action could disturb spotted owls and marbled murrelets that may be occupying the adjacent unsurveyed suitable habitat (late-seral and old-growth). For this reason the proposed action is considered to "may affect, likely adverse affect" spotted owls and marbled murrelets. To address this concern, consultation was completed for this action under the *Programmatic Biological Assessment of Fiscal Year 1999 Projects in the North Coast Province*

which might modify the habitats of Bald Eagles, Northern Spotted Owls, or Marbled Murrelets.(July 24, 1998). A final Biological Opinion (BO # 98F361) on this consultation was received October 23, 1998. All applicable terms and conditions from this BO have been incorporated into the design features of this proposed action.

Specific management guidelines for Survey and Manage mollusk species found within the proposed action area are currently being developed, but have not been finalized and approved. Therefore, design features for management of these mollusk sites have been based on existing management guidelines that call for protecting and managing known sites so as to maintain the viability of these species in these locations. Proposed design features would result in the following management regime by species:

- Blue-grey tail-dropper (13 sites): 6 sites occur outside of treatment units, 1 site occurs in a reserve island (50-100 foot radius "no-touch") within a treatment unit, and 6 sites occur within treatment units where at least 60% canopy retention would be maintained within a 50-100 foot radius of the site;
- Papillose tail-dropper (9 sites): 4 sites occur outside of treatment units as part of the stream protection buffers, and 5 sites occur in reserve islands within treatment units;
- Malone's and warty jumping slugs (3 sites): 1 site occurs outside of a treatment unit as part of the stream protection buffer, and 2 sites occur in reserve islands within treatment units.

This proposed action and the design features for these S&M mollusk species is anticipated to protect and maintain the viability of mollusks within the project area for the following reasons:

- all known sites for the jumping slugs and papillose tail-dropper, and seven of 13 sites for the blue-grey tail-dropper would be protected from ground disturbance and canopy alteration by reserve islands or no treatment;
- the remaining 6 blue-grey tail-dropper sites would receive only minimal alteration of canopy closure, with 3 of these sites occurring in helicopter yarding units where no ground disturbance is anticipated;
- the prominent habitat features found in common at most of these mollusk sites (e.g., large CWD, hardwood tree and shrub understory, moderate to high canopy closure) would not be significantly affected within or adjacent to the mollusk sites;
- the hardwood tree and shrub components within the treatment areas would be retained and enhanced relative to non-treatment areas;
- fresh input of hard CWD and enhancement of stand structure should benefit key component of mollusk habitat over the long-term (5-20 years and beyond);
- the more suitable mollusk habitat (e.g., late-seral forests, old-growth patches, and riparian hardwoods) adjacent to these treatment units, which is known to have one of these species and very likely contains all of these species, would not be affected by this action.

All the remaining wildlife species discussed in the affected environment are not likely to be substantially affected by this proposed action, so as to contribute to their decline or elevate their

status for concern for the following reasons:

- only a small percentage (1.5%) of this habitat type within the 6th field watershed (North Fork Alsea River) would be affected by this action;
- a significant amount (56.3%) of the contiguous patch (800 acres) of early to mid-seral habitat inclusive of the proposed units would not receive any treatment and is unlikely to receive any future treatment (next 2 decades);
- existing forest habitat conditions would not be lost, but rather would be retained and structurally enhanced;
- existing corridors for movement through Riparian Reserves would not be appreciably diminished, and would improve in quality over the long-term (5-20 years);
- many of the species discussed above are more closely associated with late-seral forest habitat which would not be affected by this proposed action;
- the species that may occur within the treatment units either do not make significant use of this habitat type or their use of this habitat is dependent on structural components (canopy closure, hardwoods, snags and down logs, existing stick nests) that would not be substantially diminished within the contiguous patch of habitat that is locally available;
- road construction and reconstruction represents a very minor change in overall habitat conditions, and would not significantly hinder the movement of the small wildlife species which have limited dispersal capabilities;
- and lastly, the resulting CWD creation and road decommissioning/blocking would result in improved habitat conditions for some species in the long-term (5-20 years).

Cumulative Impacts - Wildlife Habitat and Species. Considering current harvest technology and market value for this type of timber, perhaps 25% of these early to mid-seral forest stands on federal lands within the 6th field watershed may receive a similar type of density management treatment within the next 20 years. The collective amount of this seral stage of habitat within the watershed is not stagnant, but constantly in transition (ecological succession) from early open habitats toward mature forest stands. Ecological succession would move about 25 % of this habitat into late-seral forest conditions over the next 20 years, improving both the quantity and quality of late-seral forest habitat within the watershed. Clear-cut harvests on private lands could remove as much as 45% of this mid-seral habitat type in the next 20 years. While density management (thinning harvests) does alter forest structure, such treatments do not result in a loss of habitat for most of the species of concern that are known or suspected to use these forests. The cumulative impact to species and habitats resulting from density management treatments that may occur within the next 20 years is considered minor.

4. Environmental Consequences for Botany/Fish/Wildlife: Alternative B.

The likely consequences to Botany/Fish/Wildlife resources from this alternative are very similar to Alternative A. However, more ground disturbance is expected to occur due to the greater amount of road construction and lack of helicopter yarding. This would increase the amount of sediment

delivery to streams within unit 13 and 4. Ground based yarding closer to riparian zones would have more impacts to streams adjacent to unit 13 due to compaction and stream crossings by large tractor equipment. In unit 4, additional yarding corridors (up to 5, 15-20 feet wide) would have to cross a small first-order stream. This could eliminate up to 100 feet of shade over this stream. About 10 fewer acres of existing forest habitat would be treated by this alternative. The impacts to wildlife habitats and species would be essentially the same as stated for Alternative A, but with a marginally greater impact on small dispersal limited species due to increased ground disturbance.

5. Environmental Consequences for Botany/Fish/Wildlife: No Action

The No Action alternative would not disturb the current plant communities and their rate of development. No additional roads would be constructed or renovated. New soil/duff disturbance would remain low. Suppressed shade intolerant conifer trees would die and decay on site. The development of the understory and ground cover would be delayed until these forest stands received additional sunlight from dead and/or dying canopy trees. The development of older forest characteristics would occur naturally through time but at a slower rate than would likely occur following the proposed action. Since there are no known sites of special status plant species within the proposed project area, none would be affected. All of the known sites of S&M and Protection Buffer species would be protected from any ground disturbing activity and the microclimate would be maintained. The existing level of noxious weeds in the area would remain approximately at or below the current level.

This alternative would avoid short-term increases of sediment. However, the long-term benefit of stand enhancement and road obliteration would not occur. Current and on-going sediment delivery from problem roads would continue.

This alternative would result in no change to the affected environment for wildlife resources. Short-term impacts to species as described in Alternative A would be avoided. However, long-term gains in forest structure and reduced open road miles would not be achieved.

G. Fuels/Air Quality (Issue 5).

1. Fuels/Air Quality Issues:

What effect would the proposed project have on fuel loading and fire risk? How would air quality be effected by the potential prescribed burning for fuel hazard reduction?

2. Affected Environment for Fuels/Air Quality

The project area is presently occupied by fairly continuous stands of second growth Douglas fir timber with varying minor components of western hemlock, Western red cedar, bigleaf maple, alder,

and scattered large remnant Douglas-fir trees. Stand ages range from 37 to 54 years in age. Undergrowth is moderate to heavy salal, Oregon grape, vine maple and huckleberry. There is a moderate accumulation of dead woody material on the ground. Small snags are numerous as is typical for this age stand. Large snags (> 20" diameter) are less than 2 per acre. Based on visual estimates, using GTR-PNW-105, series 4-DFHD-4, 5-DFHD-4, the total dead fuel loading for these stands ranges between 12 to 33 tons per acre Fuel model for these sites would be model 8 - closed timber litter.

The proposed action lies toward the eastern edge of the Oregon Coast Range and just to the west of the designated smoke management area inclusive of the Willamette Valley. The City of Corvallis and Philomath are the largest population centers within 20 air miles of the proposed action.

3. Environmental Consequences for Fuels/Air Quality: Proposed Action

Fuel loading and fire risk would increase at this site as a result of the proposed action. The increase in slash created by the proposed thinning would result in a higher risk of fire on the thinned sites following logging. The increase in fuel loading is expected to be 5 to 15 tons per acre with a discontinuous arrangement. Total dead fuel loadings would range from approximately 20 to 45 tons per acre. The highest fuel loadings would be scattered through the site depending on the distribution of trees cut with the various prescriptions. The fuel model would shift from Model 8 to model 10 or 11. Overall the risk of fire following this action would be moderate.

Risk of fire would be greatest during the period when attached needles dry out the first season following cutting. These “red needles” generally fall off within one year and fire risk greatly diminishes. Fire risk would continue to diminish as the area greens up and the fine twigs and branches begin to break down. Any gates or berms that are installed to restrict traffic would reduce vehicle access to the site and reduce risk of a fire start. In order to further mitigate fire risk, this site should be posted closed to all off road motor vehicle use during the closed fire season the first year following harvest activities while fuels are in the “red needle” stage . The area should be monitored for the need of additional closures during subsequent years during periods of high fire danger. Burning of landing piles and slash concentrations along roads would reduce risk of a fire start from human ignition sources.

Since all burning would be done in the Fall under good atmospheric mixing conditions, threat of impacting air quality in designated areas would be very low.

4. Environmental Consequences for Fuels/Air Quality: Alternative B.

The environmental consequences of Alternative B would be essentially the same as those described above for Alternative A.

5. Environmental Consequences for Fuels/Air Quality: No Action

No action would result in the continuation of current conditions at this site (i.e. timber stand and brush would continue growing. None of the existing roads would be decommissioned.

IV. LIST OF PREPARERS/INTERDISCIPLINARY TEAM MEMBERS.

NAME	TITLE	DATE/INITIAL
Gary Humbard	Lead Forester/ Logging System Specialist	6/24/99 GLH
Scott Hopkins	ID Team Lead/ Wildlife Biologist	6/21/99 SH
Diane Morris	Silviculturist	6/15/99 DM
Ron Exeter	Botanist	June 24, 1999 / RE
Patrick Hawe	Hydrologist	PH 6/24/99
Amy Haynes	Riparian Ecologist	ah 6/24/99
Steve Liebhardt	Fisheries Biologist	6/24/99 SL
Tom Tomczyk	Soil Scientist/Fuels Specialist	TST 6/24/99
Steve Cyrus	Civil Engineer Technician	S.B.C. 6/24/99
Mark Yeiter	Cruiser/Appraiser	MAY 6-28-99
Tom Vanderhoof	Cultural Resources Specialist	for TL
Belle Verbics	Nepa Coordinator	BV 6/26/99

V. CONSULTATION.

In addition to the interdisciplinary team that reviewed this proposed action, the following agencies or individuals provided input or assistance to the ID Team:

U. S. Fish and Wildlife Service, Regional Office, Portland
National Marine Fisheries Service, Regional Office, Portland
Allen Mitchell, Oregon Department of Transportation
Consumers Power
Tom Holman, Swanson-Superior Forest Products
Evan Evanson, Contract Administrator, Siuslaw National Forest

VI. REFERENCES.

Hann, D.W., A.S. Hester, C.L. Olsen. 1997. *Organon, Edition 6.0.* Department of Forest Resources, Oregon State University, Corvallis, Oregon. 135 pages.

Hostetler, B. and B. Ross. 1996. Generation of Coarse Woody Debris and Guidelines for Reducing the Risk of Adverse Impacts by Douglas-Fir Beetle. USDA Forest Service, Region 6, Westside Forest Insect and Disease Technical Center. Troutdale, Oregon. Unpublished.

USDA Forest Service and USDI Bureau of Land Management. 1994. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* [ROD]*; and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* [S&G]. Portland OR. Note: The ROD and S&G are collectively referred to herein as the *Northwest Forest Plan* [NFP].

USDA Forest Service and USDI Bureau of Land Management. 1997. *Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (RO267, RO268), version 1.3 June 1997*. Supervisor's Office, Siuslaw National Forest, Corvallis Oregon. 86 pp. + Map packet and Appendices.

USDA Forest Service and USDI Bureau of Land Management. 1998. *Programmatic Biological Assessment of Fiscal Year 1999 Projects in the Oregon Coast Range Province Which Would Modify the Habitats of Bald Eagles, Northern Spotted Owls, or Marbled Murrelets.* USDI-BLM, Salem District, Salem, OR. Unpublished, interagency document prepared to facilitate consultation through Section 7 of the Endangered Species Act.

USDI Bureau of Land Management. 1985. *Northwest Area Noxious Weed Control Program Final Environmental Impact Statement.* Oregon State Office, Portland OR. December, 1985.

USDI Bureau of Land Management. 1986. *Record of Decision Northwest Area Noxious Weed Control Program*. Oregon State Office, Portland OR. April, 1986.

USDI Bureau of Land Management. 1987. *Supplement to the Northwest Area Noxious Weed Control Program.* Oregon State Office, Portland,OR. March, 1987.

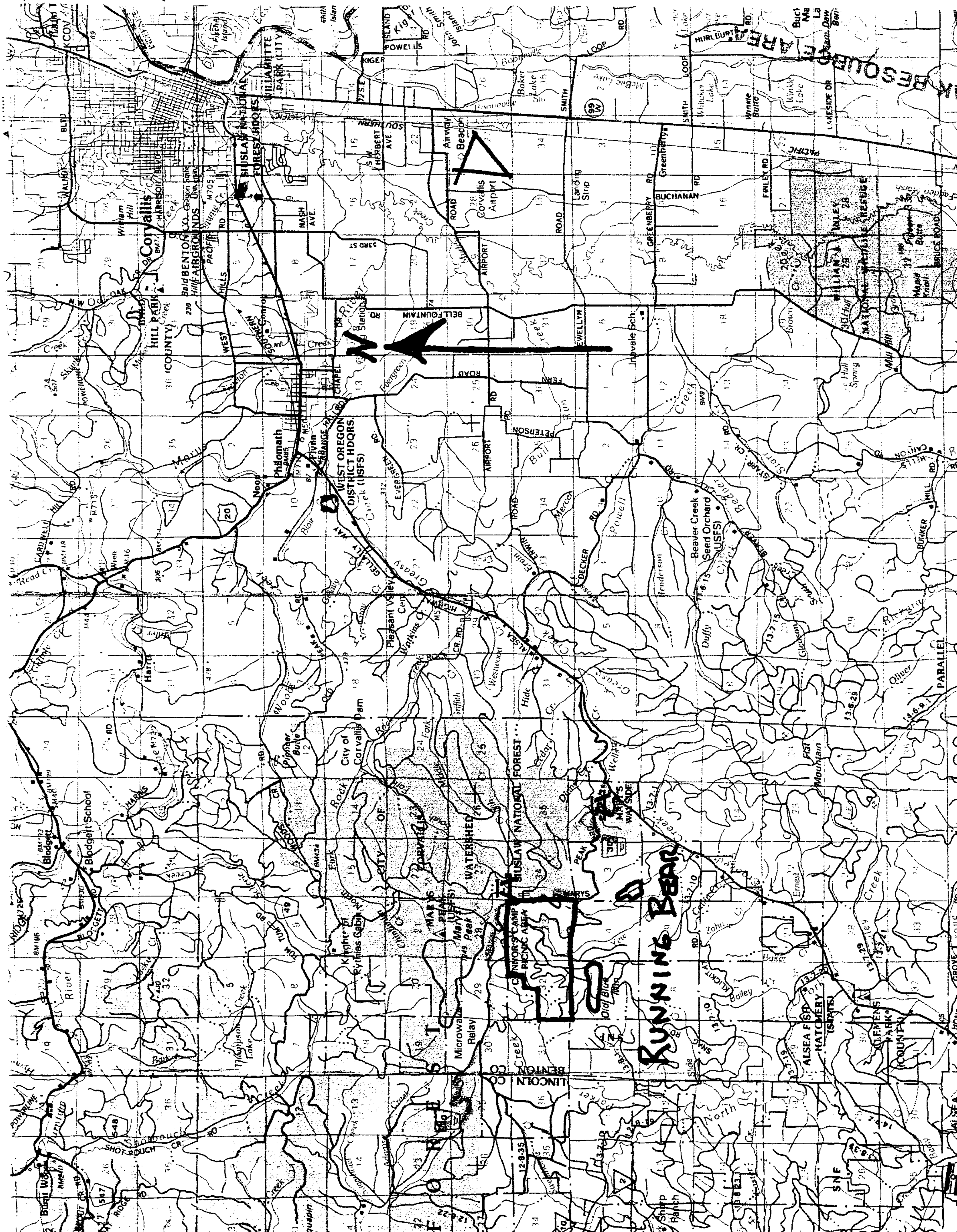
USDI Bureau of Land Management. *Record of Decision Supplement to Northwest Area Noxious Weed Control Program*. Oregon State Office, Portland OR. May, 1987.

USDI Bureau of Land Management. 1994. *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* [PRMP/FEIS]. USDI-BLM, Salem District, Salem Oregon. September 1994. Two Volumes including Appendices.

USDI Bureau of Land Management. 1995. *Salem District Record of Decision and Resource Management Plan (RMP)*. USDI-BLM, Salem District, Salem, OR. 81 pp. + Appendices

USDI Bureau of Land Management. 1996. *Watershed Analysis - North Fork Alsea River*. Salem District Office, BLM, Salem, Oregon. 229 pages including appendices.

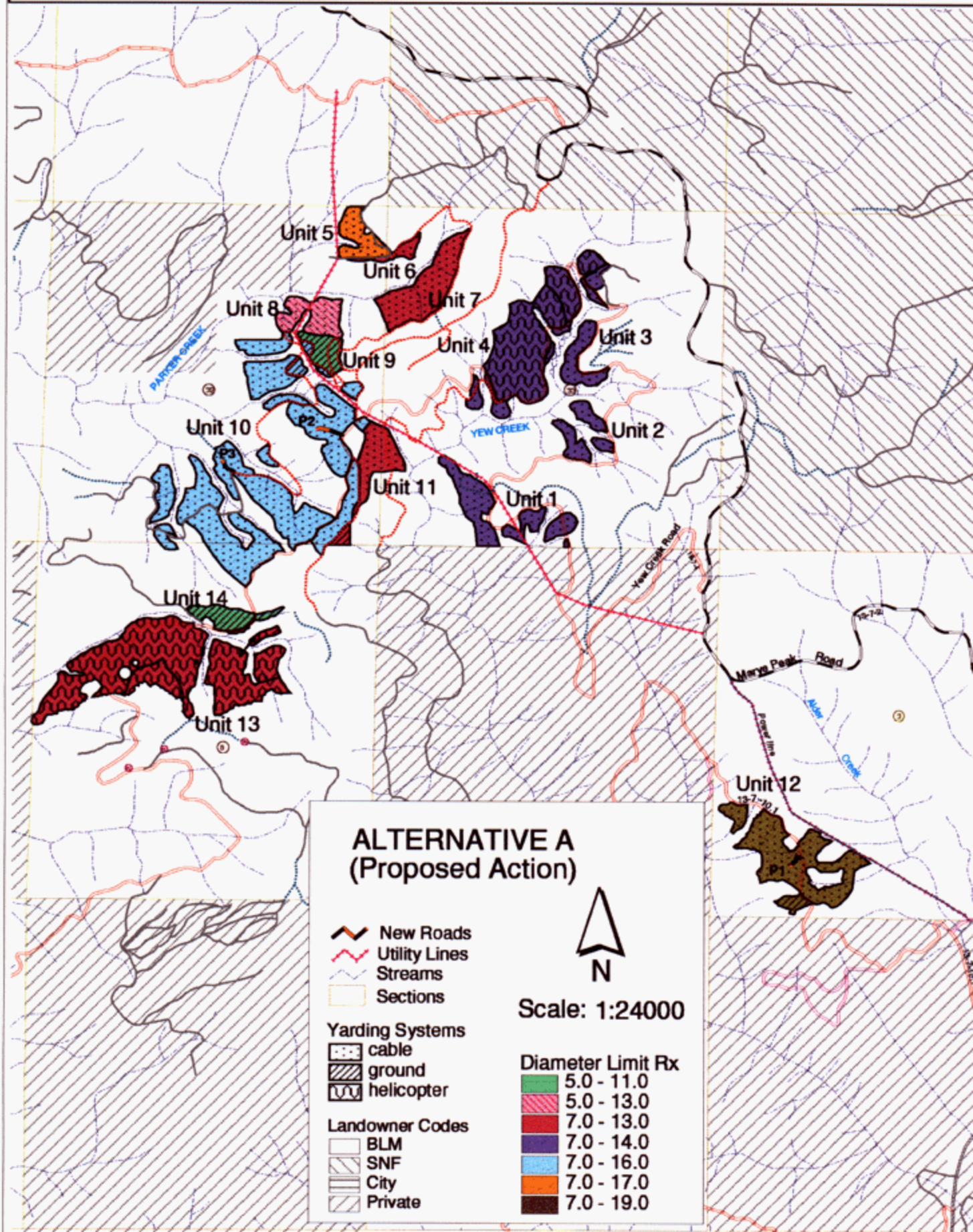
Map 1



Corvallis
Philomath
WEST OREGON DISTRICT HDQRS. (USFS)
SIUSLAW NATIONAL FOREST
CITY OF CORVALLIS WATERSHED
City of Corvallis Dam
Corvallis Airport
Beaver Creek Seed Orchard (USFS)
ALSEA FISH HATCHERY (STATE)
CLEMENS PARK (COUNTY)
Blodgett School
BENTON CO
LINCOLN CO
Running Bear

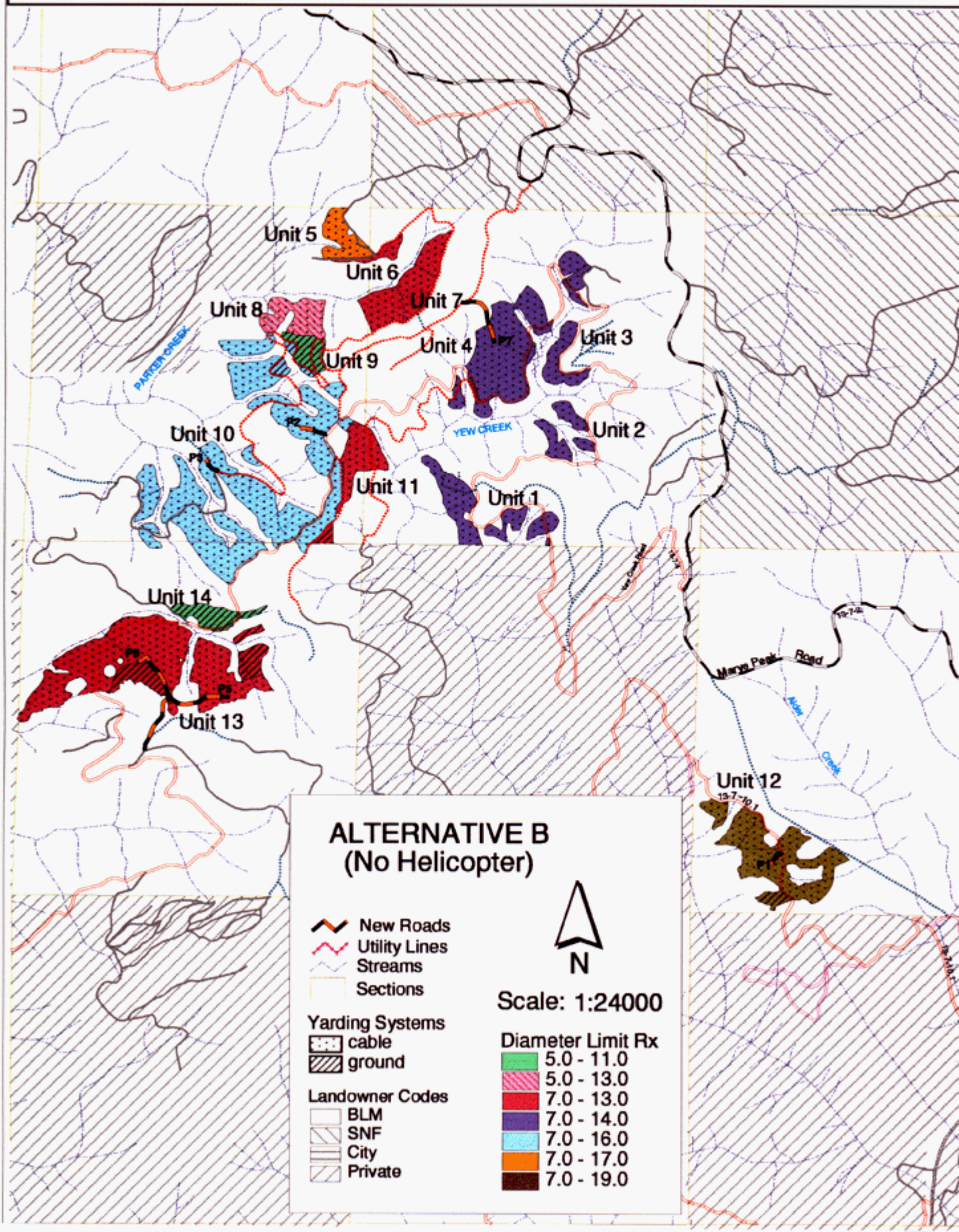
United States Department of the Interior
BUREAU OF LAND MANAGEMENT

RUNNING BEAR LSR ENHANCEMENT PROJECT



United States Department of the Interior
BUREAU OF LAND MANAGEMENT

RUNNING BEAR LSR ENHANCEMENT PROJECT



APPENDIX B. Environmental Elements Review Summary

Running Bear LSR Enhancement Project, FY99

The following tables summarizes environmental features which the Bureau of Land Management is required by law or policy to consider in all Environmental Documentation (BLM Handbook H-1790-1, Appendix 5; Critical Elements of the Human Environment). Information in the tables applies only to the proposed action.

Environmental Feature	Affected/May Be Affected/Not Affected	Remarks
Air Quality	Affected	See Air Quality
Areas of Critical Environmental Concern	Not Affected	
Cultural, Historic, Paleontological	Not Affected	Survey completed 1998. No resources located.
Prime or Unique Farm Lands	Not Affected	
Flood Plains	Not Affected	
Native American Religious Concerns	Not Affected	
Threatened, Endangered, or Special Status Plant Species or Habitat	Affected	Surveys completed fall 1998 and Spring 1999.
Threatened, Endangered, or Special Status Animal Species or Habitat	Affected/Wildlife: Affected/Oregon Coast Coho ESU. Not Affected/ Bull Trout, Oregon Chub, Willamette Steelhead	Completed consultation with Biological Opinion received from USFWS 10/23/98. Consultation on-going with National Marine Fisheries Service. Biological Opinion due in July 1999.
Hazardous or Solid Wastes	Not Affected	
Drinking or Ground Water Quality	Not Affected	
Wetlands or Riparian Reserves	Not Affected: wetlands Affected: Riparian Reserves	ACS Objectives met; see Appendix C.
Wild and Scenic Rivers	Not Affected	
Wilderness	Not Affected	

Appendix B.

Common Issues Review Summary

Resources	Affected/May Be Affected/Not Affected	Remarks
Special Attention Animal Species and Habitat	Affected	See Wildlife, Chapter III
Special Attention Plant Species and Habitat	Affected	See Botany, Chapter III
Fish Stocks at Risk	Affected	See Fish, Chapter III
Minerals	Not Affected	
Land Uses	Not Affected	
Soils Sedimentation	Affected	See Soils, Chapter III.
Water DEQ 303d listed streams Water Temperature Water Quantity	Affected	See Water/Riparian, Chapter III
Rural Interface Areas	Not Affected	

Beneficial Use Review Summary

Downstream Beneficial Uses (Salem FEIS 3-9)	Applicable / Not Applicable	Remarks / References
Public water supply	Applicable	None known.
Private domestic water supply	Applicable	None known.
irrigation	Applicable	Numerous users on Hammer Creek. Nearest user on South Fork Alsea approximately 10 miles from project area.
fisheries	Applicable	resident cutthroat trout present adjacent to all units. Potential habitat for Coho and Stealhead lies downstream within 1 mile.
wildlife	Applicable	Habitat, water supply
recreation	Applicable	Fishing, swimming
aesthetic quality	Applicable	Meet clean water standards

APPENDIX C. Aquatic Conservation Strategy Objectives Review Summary.

Running Bear LSR Enhancement Project

(EA# OR080-99-09).

ACS Objective	Does the project meet this ACS Objective?	Remarks / References If "Yes", How? If "No", Why Not?
Maintain and restore distribution, diversity, and complexity of watershed and landscape features to ensure protection of aquatic systems.	Yes _x_ No ___	Silvicultural treatment in managed stands less than 80 years of age offers the opportunity to reduce overstocked density, moderate tree species diversity, alter forest structural characteristics, and amend coarse woody debris conditions. Such treatments are believed to result in forest stands that more closely approximate the structure and function of a late -successional forest. As these treated stands age beyond 80 years, secondary structural characteristics (e.g., understory canopy development, large dominant trees) are likely to develop sooner than if no treatments were performed. The proposed density management project within the Riparian Reserves would be a means to enhance late-successional forest conditions and accelerate attainment of these conditions across the landscape. The increased structural and plant diversity would ensure protection of aquatic systems.
Maintain and restore spatial connectivity within and between watersheds.	Yes _x_ No ___	The *North Fork Alsea Watershed Analysis* identified a corridor of federal lands that could provide a significant opportunity to promote terrestrial connectivity of older forest habitats across the watershed. The *Late Successional Reserve Assessment, Oregon Coast Province-Southern Portion* (*LSRA)* set priorities for treatment of federal lands designated as LSRs across the landscape. The proposed project area is within a "cell" identified in the LSRA as a critical linkage between large patches of late-successional habitat. Treatment goals for this "cell" were identified as management activities which will attain late-successional characteristics. The proposed project would maintain and restore critical connectivity in this portion of the watershed for terrestrial and riparian dependent species. In addition, new road construction would not occur in riparian areas and no culverts would be used that would potentially hinder movement of aquatic species. Decommissioning/blocking of roads would enhance the effective patch size of undisturbed habitat within the existing corridor of connectivity.

APPENDIX D. Supplemental Monitoring Plan:

Running Bear LSR Enhancement Project

In addition to the mandatory requirement for monitoring of forest management projects (see Salem District RMP, Appendix J), the Interdisciplinary Team (IDT) for this proposed project recognized the need to evaluate the results of implementation as part of the overall adaptive management process for treatments intended to enhance forest habitat conditions within LSR and Riparian Reserves. Two of the four monitoring items are a requirement of full implementation of the proposed action, while the remaining items are contingent on available time and funding. All of these monitoring items area designed to provide useful information for evaluating effectiveness of the proposed action and for incorporating successes into future treatments.

Supplemental Monitoring Items for: **Running Bear LSR Enhancement Project**	
ITEM 1 - COARSE WOODY DEBRIS MONITORING	
Description	Post-harvest assessment of coarse woody debris (CWD) accumulations from harvest activities, windthrow, and prescriptive treatments.
Requirements	**Monitoring required in EA**, within 4 years post-harvest date
Methods	Utilize efficient field method (either: walk through estimates, fuel loading photo comparison, line intercept transects) to assess post-harvest accumulation of quantity and quality of CWD for all units.
Documentation	A summary of CWD conditions with recommended new inputs will be placed in analysis file following completion of this monitoring item.
Intended Use	1). Units that are significantly below the prescribed CWD inputs of EA will be scheduled to receive CWD creation. 2). Estimates of CWD recruitment from harvest, windthrow, and insects will be considered in future LSR treatments
ITEM 2 - POST HARVEST FUELS ASSESSMENT	
Description	Post-harvest assessment of fuel loading and fire risk
Requirements	**Monitoring required by EA and by fuels management policy**
Methods	Standard methods for fuels management inventory
Documentation	All data and any summaries retained by fuels management specialist
Intended Use	1). Employ management actions that effectively mitigate fire danger. 2). Consider results in development of future LSR treatments.

ITEM 3 - FOREST STAND CONDITION ASSESSMENT	
Description	Pre- and Post-harvest monitoring of forest stand conditions in both LSR and Riparian Reserve allocations.
Requirements	Implement as time and funding allows. All pre-harvest data has been collected and several photo-plots have been established.
Methods	Pre-harvest stand data includes standard stand-exam plots and several treatment verification plots. Additional data may include fish-eye photos of canopy closure and lateral photo arrays taken at plot centers. Post-harvest data may include standard stand exam or verification plots in selected units along with photo plots.
Documentation	All data will be retained by silviculturists or forest ecologists.
Intended Use	1). Consider results implementation relative to desired future condition of stands. 2) Incorporate information into the development of future LSR and Riparian Reserve treatments.
ITEM 4 - SURVEY AND MANAGE SITE CONDITION MONITORING	
Description	Pre- and Post-harvest monitoring of stand conditions at selected Survey and Manage (S&M) fungi and mollusk sites within or adjacent to harvest units.
Requirements	Implement as time and funding allows. Some pre-harvest vegetation data collected as part of S&M survey protocols and a few photo-plots have been established.
Methods	Pre- and post-harvest data to should include vegetation sample and lateral photo arrays taken at S&M fungi and mollusk sites. Vegetation data should include estimates of CWD, canopy closure, and shrub/ground cover condition. Post harvest stand conditions should be assessed after leaf-out in the Spring within one year of harvest date. Additional surveys for pertinent S&M species within 4 years post-harvest are optional.
Documentation	All data and any summaries developed will be retained by botanist or wildlife biologist.
Intended Use	1). Communicate results to recognized experts for applicable S&M species. 2). Consider information in development of S&M species management for future thinning harvests.

ACS Objective	Does the project meet this ACS Objective?	Remarks / References If "Yes", How? If "No", Why Not?
Maintain and restore physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	Yes _x_ No ___ N/A ___	A "no activity" stream protection buffer would maintain the integrity of shorelines, banks and bottom configurations. Criteria used to designate buffers were riparian vegetation, significant slope breaks, active floodplain or high water tables, and areas contributing to stream shading. All buffers are a minimum of 25 feet. Trees would be directionally felled within one tree height of the buffers and if any fall within the buffers they would not be removed. Management activity throughout the project area is not likely to cause any alteration in water flows that could affect channel morphology. New road construction would not occur in riparian areas and no culverts would be used that would potentially hinder movement of aquatic species. Decommissioning roads would remove culverts and restore natural hydrologic function, restoring dispersal potential for aquatic species.
Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	Yes _x_ No ___	Increases in stream temperature as a result of this action are unlikely. Stream protection buffers were designed to provide adequate shading. Numerous design features for the proposed action would mitigate impacts from road construction, felling, yarding, hauling, and prescribed burning to the extent that effects to soils and water resources were determined to be minimal. Road construction, and subsequent decommissioning or blocking would employ design features to reduce any concentrations of runoff and sedimentation.
Maintain and restore the sediment regime under which system evolved.	Yes _x_ No ___	Increases in mass wasting and alterations in sediment regime as a result of this action are of low probability. Existing roads would be improved, and all new and reconstructed roads, including road 12-7-32.1 would be decommissioned after the sale. This would result in a short term increase in potential sedimentation, but a long term decrease. The net decrease in roads in the proposed project area would be 2.1 miles.
Maintain and restore instream flows.	Yes _x_ No ___	Alteration in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect would be difficult to measure and unlikely to substantially alter streamflow or water quality.

ACS Objective	Does the project meet this ACS Objective?	Remarks / References If "Yes", How? If "No", Why Not?
Maintain and restore the timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands.	Yes x No ___	The proposed project would have negligible or no effects on existing flow patterns and stream channel conditions, and therefore would not alter existing patterns of floodplain inundation or water table elevation,
Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide thermal regulation, nutrient filtering, and appropriate rates of bank erosion, channel migration and CWD accumulations.	Yes x No ___	Actual riparian zones (stream protection areas) along streams would be excluded from treatment, and only the upslope portions of the Riparian Reserves would be included in the density management treatment. All trees would be directionally felled away from streams within one tree height of stream protection buffers. If a cut tree does fall within a stream protection buffer, it would not be yarded. Stream buffers and residual trees would continue shading streams. Crowns would eventually close again as the trees grow. Density management in the Riparian reserves would help restore structural diversity, complex understory components and increase tree size more quickly than if stands were left untreated.
Maintain and restore habitat to support well distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species	Yes x No ___	Habitat to support well distributed riparian-dependent and riparian associated species would be restored by reducing overstocked stands, moderating tree species diversity, altering forest structural characteristics and amending coarse woody debris conditions. Such treatments are believed to result in forest stands that exhibit such older forest characteristics as large diameter trees with deep, wide crowns and large limbs, complex understory with vegetation developing at mid canopy and ground levels, and large diameter snags and CWD. Such a habitat would support diverse populations of plants, invertebrates, and vertebrates.

(Note: See RMP pg 5-6 for more detailed explanations of the ACS objectives).